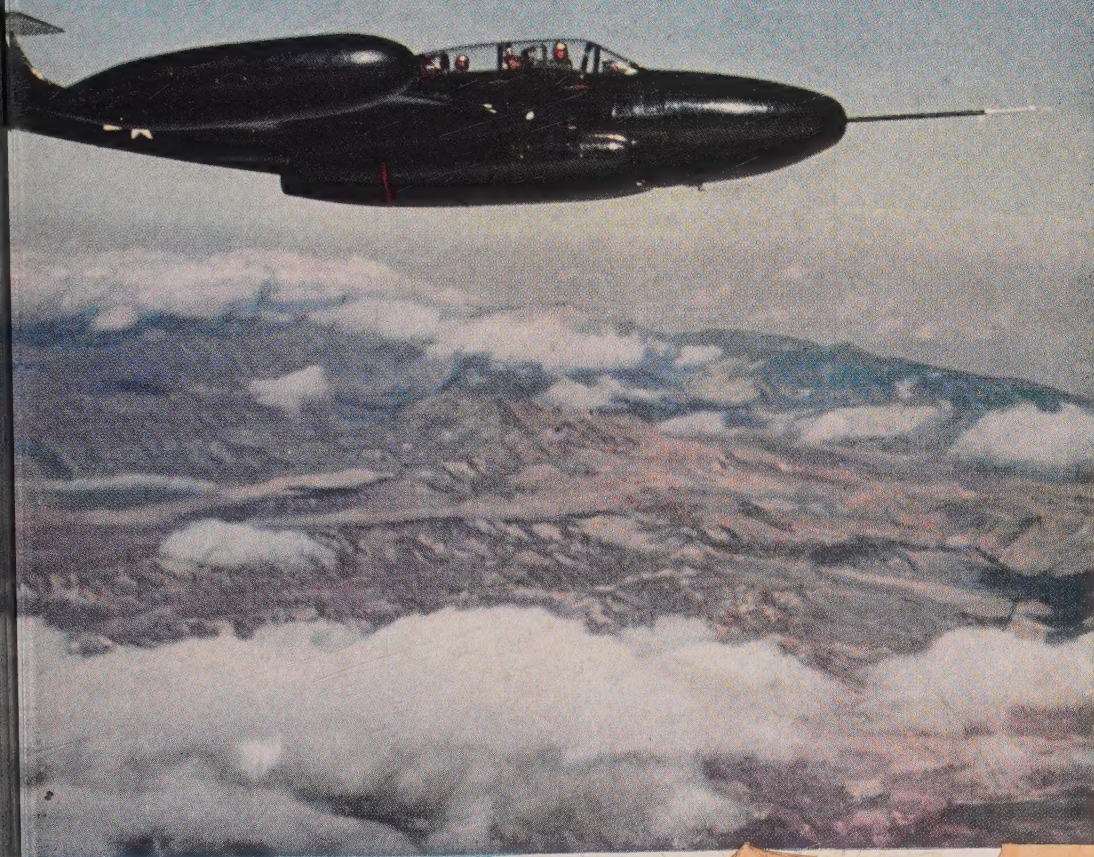


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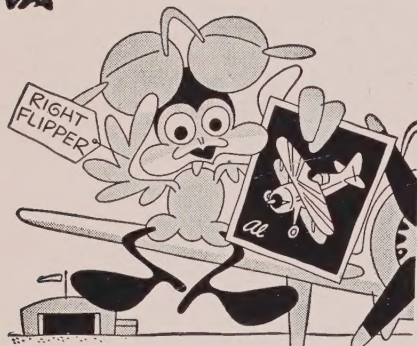
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The Birdmen's Perch

By *Major Al Williams, ALIAS, "TATTERED WING TIPS,"*
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.



Four fellahs wrote in to us and asked for a picture of our old F3F. Ex-service pilots who'd seen us demonstrate aerobatics in the old Gulfhawk during the war.

They said that she must be a pretty sweet type of aireoplane. And could they please have pictures of her.

Pictures! Heck, we'd practically give our right arm to anyone who says nice things about that stubby little sweetheart. But they didn't ask for a right arm, so we sent 'em pictures. In fact, we sent 'em pictures of the old Gulfhawk (the F3F) and the new one (F8F)! Auto-graphed 'em, too.

Then we got to wondering if any of you Perch Pilots had the same affection for these two fireballs that we do.

Anyhow, we ordered up a stack of pictures of the two Gulfhawks which we'll send to you as long as the supply holds out. Handsome 8 x 10 glossy prints they are, and we signed every one of them!

Let us know where to send them, and they're yours! (And you might send in a Little Known Fact, if you're extra bright!)

They're free and the address is at the top of the page.

GETTING YOUR BEARINGS

Know what an additive is?

We're going to tell you right now because there are some mighty important additives in Gulfpride-Aviation Series D, the great new Gulfpride Oil for horizontally opposed aircraft engines.

Well sir, when the shaft starts really RPMing, it gives the oil that's lubricating the bearings a very tough time, indeed!



The engine gets so hot that it has a tendency to break down the oil and oxidize it fast!

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So, along with being the only lubricant for light aircraft engines which has been put through the extra Alchlor Process refining step, Gulfpride-Aviation Series D has an *additive* which is an oxidation inhibitor to slow way down on that harmful cause of sludging.

Then, to give extra protection to costly bearings, this great oil has another *additive* which eliminates any possibility of corrosion!

And when you remember how it helps to unstick valves and rings and keep them unstuck, how it increases time between overhauls, how it keeps engine innards clean . . . why, this Gulfpride-Aviation Series D adds up to a lot of extra lubrication value, doesn't it?

Better ask for it.



LITTLE KNOWN FACTS DEPT.

We're not getting Little Known Facts About Well-known Planes from very many of you guys!

This is especially alarming in view of all the letters we had when we considered dropping the department. All we can say is "Shame," and how do you ever expect to become a real Perch Pilot (bottom rung) if you don't send in Facts?

So we'll give you one of our own:

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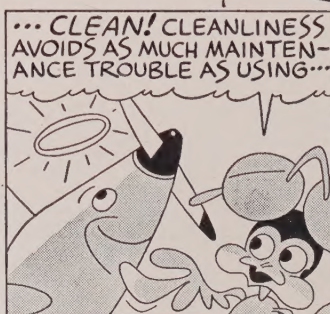
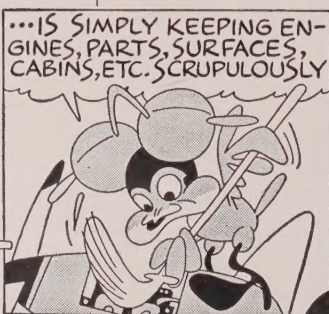
How about that?

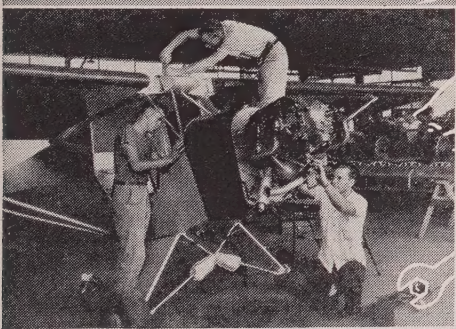
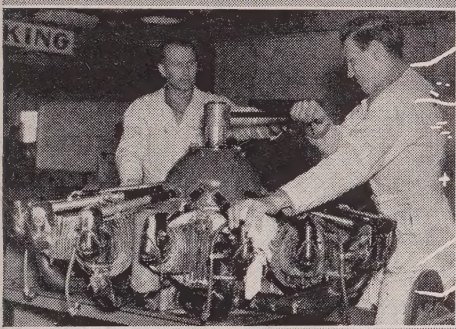
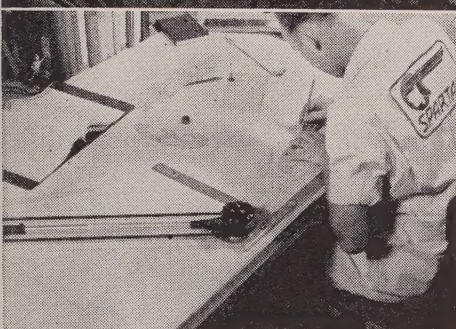
Now as soon as you call the Gulf Lubrication Engineer and ask him over to help you figure out your lubrication maintenance problem, sit down and write us a Little Known Fact!

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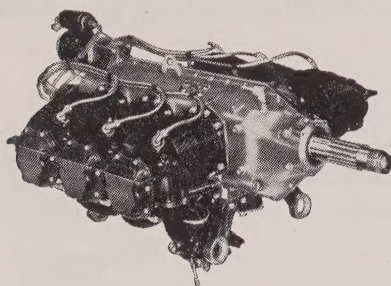
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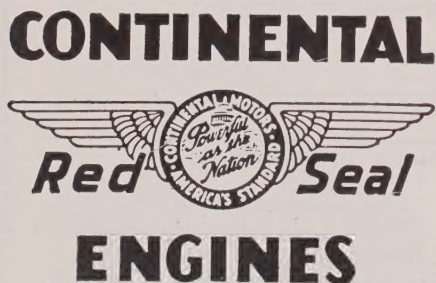
It's a tribute to a superior product, backed by superior service — this steadily-growing preference for planes with Continental power. It's based on proven performance, economy and long life, as well as on the knowledge that parts and service, when needed, are at hand wherever you may fly. Nine outstanding models, starting with the A65, are providing **dependable** power for today's finest personal, family and executive type planes.

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SKYWAYS

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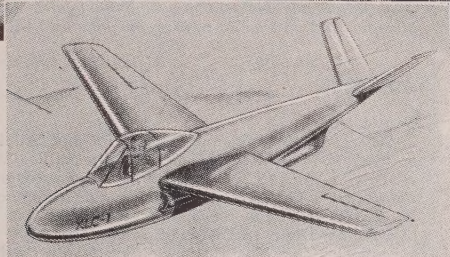
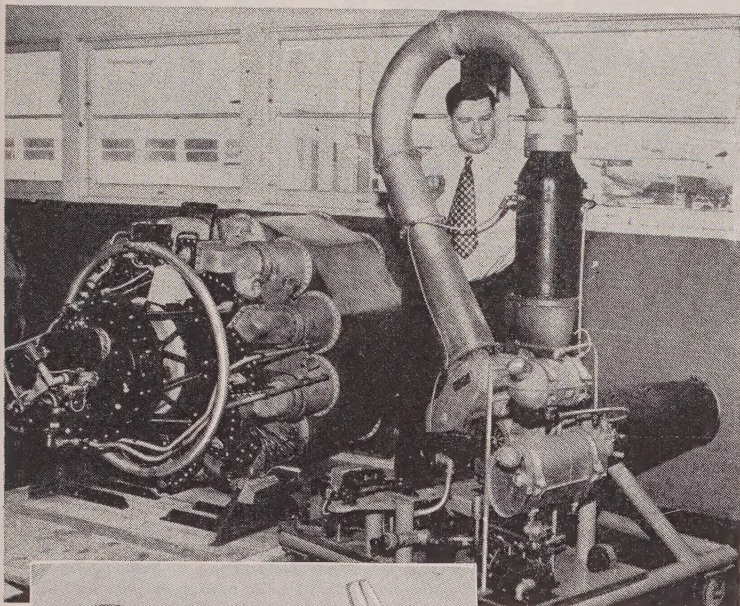
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SKYWAYS

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AIR YOUR VIEWS

Pilot-Governor

Gentlemen:

Your referring to Michigan's Governor (then) Kim Sigler as "only flying Governor" is very much in error. We flyboys here in Utah are well aware that our Governor Herbert B. Maw has been flying his Ercoupe to all parts of the state, for business and pleasure, for some time. He is well known at the airports around this state. As a pilot and our Governor he is a great and enthusiastic supporter of private, commercial and military aviation here in Utah and elsewhere as well.

BOYD B. HILTON

Ogden, Utah

SKYWAYS bows deeply in apology to Governor Maw of Utah and to the flyboys there who are proud of Gov. Maw's aeronautical prowess. With your permission, we'll join the circle too and offer further congratulations to Utah's Flying Governor. Thanks for bringing us the info.—Ed.

Paint Problem

Gentlemen:

In your article "To Paint or Not To," could it just be coincidence that you mentioned the name of the Cee-Bee Chemical Company as having developed a compound for removing paint, and at the same time not be aware of the fact that the same company also has developed a product for keeping aluminum clean and bright without the usual hard work and high cost of using abrasive type polishes for the same purpose? The material is known as Cee-Bee A-3 Brightener, and not only does it remove all of the dulling oxide film and restore the aluminum to its original color, but it also leaves the surface inhibited and retards further corrosion. There is no more work to using this material than ordinary washing of the airplane. Even if a plane was painted, it would still have to be washed periodically and also polished.

We have been using A-3 Brightener on our Company Beechcraft and have been able to maintain the plane in first-class appearance with a minimum of work and cost. We have also found it very difficult to maintain a painted surface. The paint chips and also loses its luster quite quickly unless it is kept polished, and we have not found the polishing of a painted surface to be very much cheaper or easier than polishing the aluminum. The A-3 Brightener seems to us to be the best and cheapest thing that we have seen to date for taking care of an all-metal airplane.

C. H. MORROW
Chief Plant Engineer

J. B. Case Company
Racine, Wisconsin

Thank you, Mr. Morrow, for your very excellent and informative letter. We have tried for some time to get that sort of information from companies owning aircraft. Our failure to mention The Cee-Bee A-3 was by no means intentional. The Cee-Bee Chemical Company produces many very wonderful products, and we're sorry space

in that article did not permit our giving more than casual mention to several of their products and several products of other companies, too. In preparing that article, the author contacted service operators and aircraft owners along the East Coast.

Apparently he didn't happen upon anyone who mentioned the A-3 Brightener, and so no mention was made of it in the article. We feel the product is important, however, because we know of many companies anxious for the type of information your letter has brought us. Thanks again, Mr. Morrow, and . . . we're passing on your info.—Ed.

Airmobile

Gentlemen:

May I express my appreciation for the article entitled "Low and Slow." Perhaps the author, as well as SKYWAYS' readers, will be interested to know that I hold Patents covering the design of an Airmobile to sell for \$2,500, the performance of which will amaze the aviation industry.

Engineers compared the airmobile favorably with the characteristics of the 'copter, found that it would perform very much like the 'copter in static life and very low speeds.

RENE CHARETTE

Ottawa, Ontario, Canada

Congratulations, Sir. Perhaps you'd let us see a photo of your Airmobile so that we could show our interested SKYWAYS' readers.—Ed.

Info Queries

Gentlemen:

Several years ago I happened to catch a glimpse of a mighty trim little biplane. Asking around the skyboys of my acquaintance, I found out that it was a Great Lakes Trainer.

Could you possibly give me some performance data on this ship? Also where there might be one for sale and what a decent price would be?

R. C. DILLON

New Augusta, Indiana

There certainly is such a plane as the Great Lakes Trainer. It was built by the Great Lakes Aircraft Corporation of Cleveland, Ohio, back in 1930, 31, 32, 33 and 34. I don't believe the corporation is in existence any more. The model built in 1930 was called the "Trainer," while those that came along in 1931, 32, 33 and 34 were called "Sport" and "Deluxe." The "Trainer" is a two-piece open (land) biplane powered by 90-hp Cirrus engine. It has a gross weight of 1700 pounds, cruises at between 90 and 100 mph, and has a range of 300 miles. We have nothing as to what a today's price might be (it cost \$3,150 in 1930) nor where one might be for sale. We would suggest, however, that you either watch classified ads or advertise that you're interested in buying one. Occasionally an old Great Lakes Trainer pops up someplace as a "For Sale" item, and it's just possible one will show up out your way. I don't believe there are a lot of them around, but if there are, you can bet they're still flying.—Ed.

Gentlemen:

I am anxious to build my own airplane. A few years ago I started to build one but ran out of money and couldn't finish it. Now, however, I have solved that problem and have the tools and know-how necessary. In a recent article you published the Driggs Dart was mentioned. Could you tell me where I might be able to get the plans for that airplane or a similar two-place all-wood ship? The Rearwin design, too, interests me.

A. J. GISSEL

Wamic, Oregon

The Driggs Dart was an airplane built back in 1928 by a company located in Michigan. This ship was powered by 35-hp engine, and was a two-place open (land) biplane. A later version was called Skylark and the last one we have a record of was built in 1932. Today there is a company located in Elkhart, Indiana, that bears the name "Dart Aircraft Corp." In some quarters it is referred to as "Applegate-Weyant." We do not know whether or not this company ever had any connection with the original Dart makers, but the plane the company now has on its records is called Dart. At one time it was possible to purchase this plane as a kit for assembly by the purchaser. The Rearwin is another plane of the early 1930 era. It was built by Commonwealth Aircraft, Kansas City.—ED.

More Low 'n Slow

Gentlemen:

I like articles like "Low and Slow" by Edward Slattery. His is an old plea that has been voiced many times within the past 30 years. I believe we are approaching this oft-expressed desire at a snail's pace.

I happen to own and fly a Customaire (Funk), so if other plane builders will pardon me, I will make a comparison between this Funk and the ole Curtiss Jenny just to see what progress we've made in 30 years.

	Jenny	Funk	Gain
Landing Speed	40 mph	40 mph	none
Top Speed	80 "	120 "	40 mph
Cruising	70 "	100 "	30 "
Seats	2	2	none
Gas Capacity	20 gals	20 gals	"
Max. Range	200 miles	400 miles	200 miles
Wing Span	44 ft	35 ft	9 ft less
Horsepower	90	85	5 hp less

This comparison shows the largest gain is in cruising range and the next is in top speed . . . all for an airplane of 9 feet less spread.

When it comes to landing in a small cow pasture, I'll bet the Jenny, in good hands, could follow my ship into almost any spot, except landing in a 40-foot wide country lane. Of course you can do things in a modern airplane that would have spelled disaster to the Jenny pilot. Compare these . . .

	Jenny	My ship
Tail spin	viscious	resistant
Power-off stall	early, easy	just mushes
Power-on stall	almost spins	continues climb
Crosswind, gusty-air landing	be careful	excellent
Taxiing	nightmare	a dream

I've mushed my plane along at a speed as low as 35 mph, but it isn't comfortable with the nose so high . . . I can't see much out front. I'll bet if my plane had flaps it could approach the much desired low speed of 30 mph at a normal attitude. With a Cessna 170 you can cruise along at 40 or 45 mph with full flaps and it's really fun! The engine at low rpm makes very little noise, the attitude is level and so visibility is good. It probably wouldn't be called safe procedure close to the ground, though.

The Curtiss Tanager, built about 1930, made the closest approach to that 20-mph low speed. It had a low speed of 30 mph, and a top of 120. It was a biplane of 200 hp, and with plenty of flaps and slots. It probably wasn't put into production because it was too expensive and too hard to handle in gusty winds.

Surely you can't blame us lightplane lovers for getting a bit misty-eyed when we think of the tremendous possibilities of a moderately priced aircraft with a speed range of from 20 mph to 120 mph. Ninety-five per cent of the time we want to fly fast, but if the ship would also go slow, here's why we'd love it:

1. Peace of mind when flying over mountains.
2. Fly low and still contact in muggy weather.
3. Land most anywhere, except downtown.
4. Easier to fly . . . and so much safer!

But cheer up, young pilots, maybe we won't have to wait so long, after all.

Berkeley, Calif.

F. A. CARPENTER

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receive Regular commissions. If you are one of the select few who can qualify for the adventurous life of an Air Force pilot and officer—inquire about Aviation Cadet training NOW!

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Investigate TODAY! Both single and married men are now eligible. Apply at your local Recruiting Office or at any U. S. Air Force Base. Or write

Chief of Staff, U. S. Air Force,
Attention: Aviation Cadet Branch,
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For men with two years of college (or who can pass an equivalent examination). Between ages of 20 and 26½. High physical and moral qualifications. New classes begin every six weeks.

U. S. ARMY AND U. S. AIR FORCE RECRUITING SERVICE

USAF NEWS



A NEW pilot training schedule that will go into effect 4 April has been announced by the Air Force. Under the new plan USAF aviation cadet classes will begin every six weeks, starting on April 4, 1949. The new system will provide for eight classes per year with each class to be composed of approximately 600 cadets.

According to USAF, the change to more frequent but smaller classes is to permit more efficient use of aircraft and personnel. It will also reduce the waiting period between a cadet's appointment and his actual assignment to a training base.

Under the old system of three classes per year, which began in March, July, and October, a total of 3,084 cadets were accepted for training in 1948. The 1949 enrollment will be the largest of any peacetime year.

The reopening of the Air Force Base at Las Vegas, Nevada, brings up to eight the number of bases where aviation cadets are being trained for duty as officer pilots in the Air Force. Basic Pilot Training—an eight months' course—is given at four Texas bases located at San Angelo, San Antonio, Sherman, and Waco. Advanced Multi-Engine Training—a four months' course—is given at Enid, Oklahoma, and Shreveport, Louisiana. Advanced Single-Engine Training—also a four months' course—is given at Williams Air Force Base, near Phoenix, Arizona, and at Las Vegas.

Statisticians at Randolph Air Force Base have studied the records of hundreds of aviation cadets and have announced that the average cadet is 22 years old, stands five feet nine and one-half inches, and weighs 150 pounds. Applicants for cadet training must be between 20 to 26½ years of age and must have two years of college or the ability to pass an equivalent examination, and must possess high moral, physical, and personal qualifications. Under new USAF directives, married men are now eligible for aviation cadet training.

A MOCK-UP of USAF's new XT-30 single-engine trainer has been completed by the Douglas Aircraft Company. A conventional, low-wing monoplane, the XT-30 is powered by a

Wright R-1300 engine rated at 800 horsepower on take-off. The engine is housed immediately aft of the cockpit and drives the propeller by means of a shaft running

under the cockpit floor. The Douglas guarantee provides that the new trainer will have a top speed of 286 mph at 10,000 feet, an endurance of 6¼ hours at 190 mph, and a service ceiling of 29,600 feet. Design gross weight is 5,999 pounds; wingspan is 36 feet, 4 inches; length is 36 feet, 9½ inches; and height, 13 feet, 6½ inches. The XT-30 is equipped with tricycle landing gear and tandem seats.

USAF's latest research plane, the X-4, recently completed its first test flight at Muroc Air Force Base in California. The swept-wing, semi-tailless plane built for the Air Force by the Northrop Aircraft Corporation remained aloft for 18 minutes on its initial hop. Pilot on the first flight was Charles Tucker, Northrop test pilot.

THE first successful glider pick-up rescue operation made in the Arctic was accomplished this winter by USAF's 10th Rescue Squadron (Detachment B) when the six occupants of a C-47 that had made a night crash landing were found and rescued the next day.

The C-47 had made a wheels-up emergency landing on the frozen Stewart River 75 miles southeast of Dawson, Yukon Territory. A search plane spotted the downed aircraft early the next morning, after which a C-54 with a CG-15 glider in tow took off from Ladd Air Force Base and flew to the scene of the crash. The glider was landed at the crash site and a short time later "picked up" by the '54.

Pilot of the C-54 was Lt. Colonel Eugene O. Strouse, Commanding Officer of the rescue detachment at Ladd AFB. The rescue glider was piloted by 1st Lieutenant Richard A. Hopkins.

THE experimental test model of Convair's XF-92 supersonic fighter already has made several test flights at Muroc Air Force Base, although none of the test hops thus far have been of the high-speed type. It will be some time before the final design of the XF-92 is decided upon.

PLANE FAX

How Glendale's Sky Roamers reduced engine maintenance cost 53%

Recently, the Sky Roamers Flying Club of Glendale, California, sent the engine of their Continental 85 Powered Cessna 140 to the shop—after 1005½ hours service without repair—for a checkup.

"It was still running quietly, had no stuck rings or valves and was using only one quart of RPM Aviation Oil in eight hours," is the astonishing report of Mr. James H. Brown, secretary-treasurer of the club.

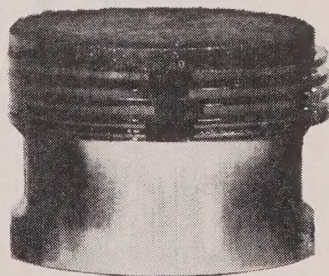
"Our previous Continental 85 engine, using two other aviation oils, stuck rings three times in 798 hours. Engine maintenance cost was \$.535 per hour.

A page of service tips for private flyers and fixed-base operators

ENGINE: CONTINENTAL 85 hp
OIL USED: "RPM"

Ring belt area free of deposit after 1005½ hours —

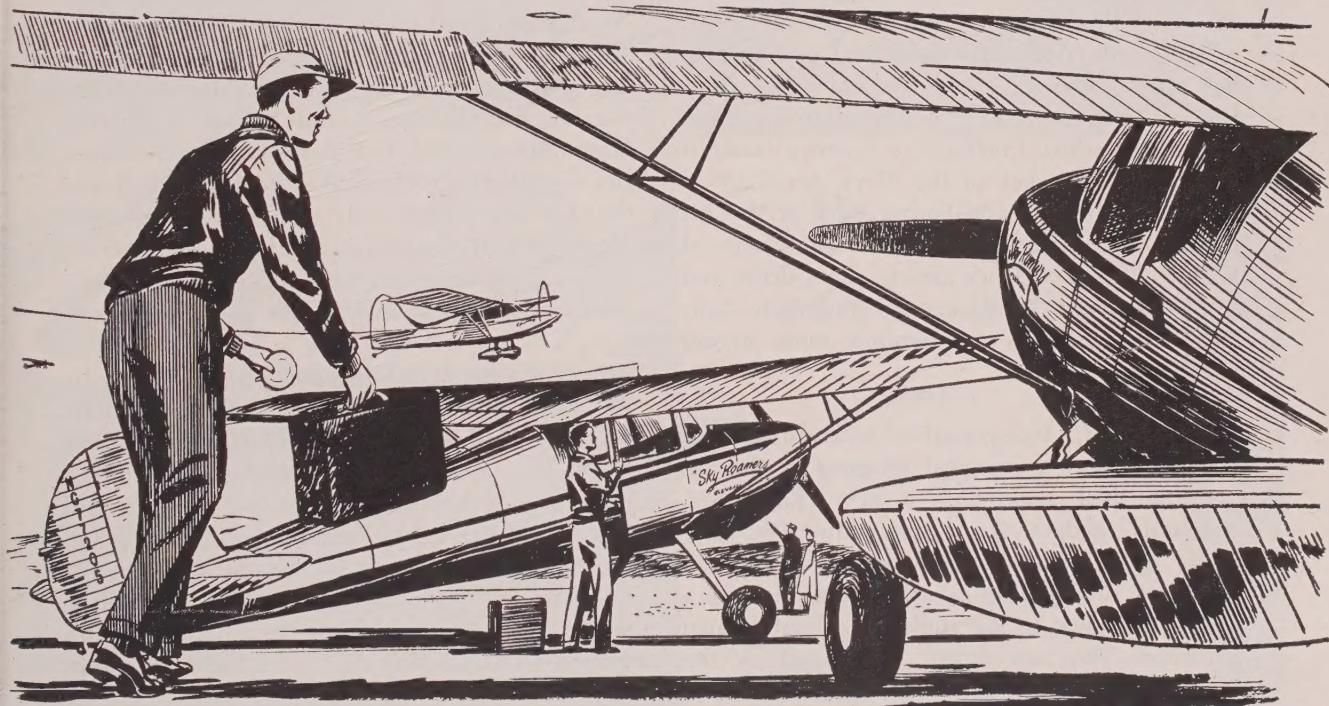
Ran four times longer than the longest run using other oils —



—Prevention of stuck rings and valves gives maximum service at \$.248 per hr.

"Using RPM Aviation Oil, with no ring or valve jobs," concludes Mr. Brown, "reduced cost to \$.248 per hour."

REMARKABLE, ISN'T IT, how the special detergent in "RPM" keeps belt areas free from deposits? And another compound in "RPM" makes it cling to hot upper cylinder walls... left bare and exposed to wear by ordinary oils. Result: "RPM" often doubles the period between overhauls!



Handling your brakes correctly?

When you use brakes excessively, without allowing them time to cool they may not hold when you need them in case of an emergency. It's a good idea to always test your brakes while taxiing before take off, and use them as little and as lightly as possible while taxiing. Even more important, inspect them regularly.

"We'll take better care of your plane"



Standard Oil Company of California

NAVAL AVIATION

MARCH is bringing to a close this year's cooperative studies in jet engine icing problems atop Arctic-like wind-swept Mt. Washington, N. H. This year's joint Navy-Air Force civilian research program is an attempt to lick the engine icing foe of winter jet flying which the Navy initiated last year. The 1947-48 Navy tests were conducted on the engines of a carrier type fighter, the McDonnell *Phantom*, which had been hauled to the 6,300-foot mountain top. The discovery that axial-flow turbojet engines are seriously affected by icing, led the Navy to invite the Air Force, and jet engine manufacturers General Electric, Pratt and Whitney, Westinghouse, Allison, and Wright Aeronautical Corp. to help lick their common problem. Centrifugal flow, J-33 and axial flow J-34, J-35, and J-47 engines are being studied. In charge of America's coldest lab are Tom Dickey of the Navy Aeronautical Engine Laboratory and Curtis Berg of the Air Force's Aeronautical Ice Research Laboratory at Willow Run. The work among snow drifts and 230 mph winds by these men and their staffs may answer some of aviation's most urgent questions.

RESearch, indispensable foundation of American technological progress in the air, rang the bell again with a new "Look, Ma, no hands" gadget. It's a fully automatic electronic "pilot" capable of flying planes through the most unfavorable weather and making a perfect let-down to the runway without human guidance. The new device, developed by the Special Devices Center of the Office of Naval Research and built by the Minneapolis-Honeywell Company, is officially designated the "Angle of attack auto-pilot". (The angle of attack is the angle between the wing and the line of flight of the aircraft.) The unique advantage of the new auto-pilot is that power delivered to the engines is controlled by an element which is sensitive to this angle of attack. When you want to make your landing, you turn the switch to "in-bound". That brings you in close to the field. When you are close enough, you turn the switch to "glide".

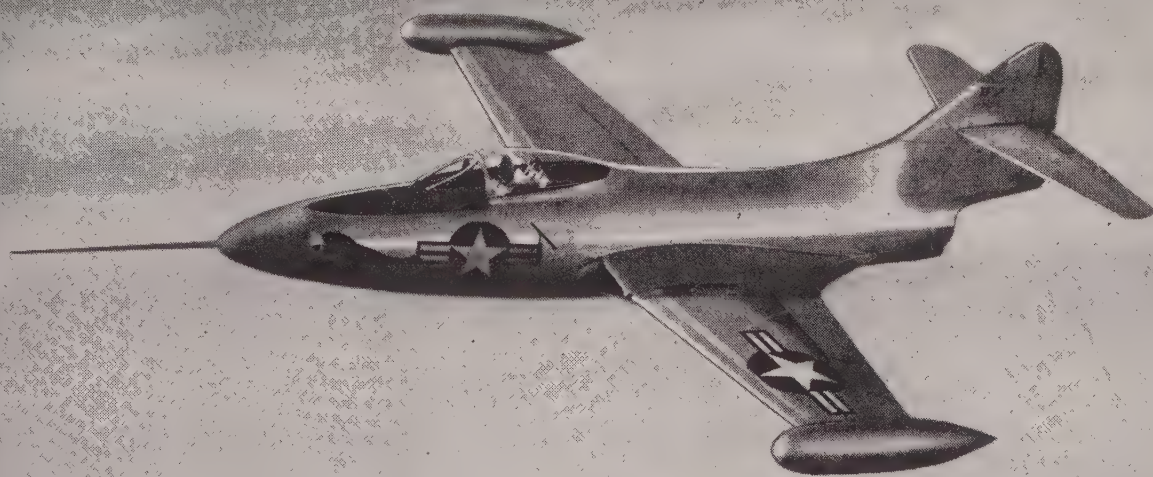


That's all there is to it. You sit back and watch the throttles and trim tabs move all by themselves! The auto-pilot keeps the angle of attack just above stalling

point as your plane slowly glides to earth on the ILS beam. The advantage of this new device over previous automatic let-down devices is that it allows landings to be made at much lower air speeds on much shorter runways. This advantage to Navy-type aviation is obvious. It is an example of specialized Navy research solving Navy problems.

THE Guided Missile Ship is here! The *U.S.S. Norton Sound* (AV 11) is the first Navy ship whose primary function is the firing of large rockets. Modified at Naval Shipyard, Philadelphia, the *Norton Sound* is now a floating laboratory for the test firing of upper-atmosphere-exploring rockets like the 14 ton V-2 and the *Aerobees*. The newly converted ship works closely with the guided missile test center at Point Mugu, Calif., and conducts rocket-firing experiments at sea safely away from populated areas.

WAS a time when prospecting was done by gents with unshaven faces plodding along on foot, on horseback, or in river boats, but times have changed. The Air-Age has moved into the prospecting business. Navy Patrol Squadron 61 based at Umiat, Alaska, prospected the Colville River and its tributaries for 1,400 miles by aerial photographic survey. Their large scale, overlapping low angle oblique photographs will take the place of a full year's field work! To get the location of all fossil and rock samples, the most valuable of all geological data, the photo planes flew only 200 to 400 feet above the ground. By mounting two K-18 cameras in a dual mount, the prospectors in white hats and bell bottom trousers shot kodacolor and black-and-white pictures simultaneously. This cut flying time by 50 per cent and Naval Petroleum Reserve No. 4 has no surface secrets left . . . Next experimental Navy plane by Grumman will feature swept-back wings, and be designated XF10F-1.



Designers
and builders
of
AIRCRAFT

★ ★ ★

THE U. S. NAVY'S PANTHER

As a further step toward our country's control of the air over land and sea when occasion requires, the U. S. Navy must have the world's finest aircraft. Newest Navy carrier and land based Jet-Fighter is the Grumman Panther, designed for maximum performance in the growing might of our naval air arm.

GRUMMAN AIRCRAFT ENGINEERING CORPORATION, BETHPAGE, LONG ISLAND, NEW YORK

Contractors in the Armed Services

Memo from

AIRPORT DEPARTMENT PRATT & WHITNEY AIRCRAFT



To: Executive aircraft operators

Private plane owners Fleet operators

The AIRPORT DEPARTMENT of Pratt & Whitney Aircraft, with its extensive facilities, is available to all operators of Pratt & Whitney engines and Hamilton Standard propellers. Repair and overhaul service is as excellent in method and personnel as that of the original factory production.

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- ★ Only the AIRPORT DEPARTMENT is equipped and staffed to perform all possible repair and overhaul operations.
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- ★ Located on one of the finest private airports in the country.

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Pratt & Whitney Aircraft
Division, United Aircraft Corporation
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PROP WASH

Aero Oddities

Lost Owner. Pilot made emergency landing in field, then begged use of field-owner's phone to call for someone to come and get him. Few minutes later, pilot drove off in car, never returned for his airplane. (G. Palmer, Los Angeles, California).

Gas Bite. When well-known oil company pilot came in to field for gasoline, he was told his brand was not sold there. Few minutes after buying 100 gallons of competitor's gas, however, he spotted his company's oil sign at other end of field. Pilot taxied across field, paid man for 100 gallons of gas he didn't take, then took off. (R. K. Wilson, Louisville, Ky.).

Featherbed Lane. When ship's hydraulic system went out, airliner pilot made a wheels-up landing at home field without even waking sleeping passengers in cabin behind him. (J. Brodsky, Brooklyn, N.Y.).

No Reply. Unexpected bad weather forced airliner pilot to land his big ship in Cuban sugar cane field. Notifying airline headquarters, pilot wired, "Landed flying boat in cane field. No gas. No injuries. No excuses." (Wm. B. Nash, Coral Gables, Florida).

Aerial Delivery. Timber Lake private pilot is also town's undertaker. When weather made roads impassable, pilot used his three-place plane to fly into remote areas, fly out "customers" for burial. (Rev. N. Hegland, Newell, S. Dak.).

Round Trip. Anxious to live in U.S., a native of Fiji Islands stowed away on airliner bound for Honolulu. Apprehended by officials, native was returned to Fiji Islands via airliner. This time he rode in passenger com-

partment and not in nosewheel well. (Ed McNamara, Detroit).

Flying Fur. When *Constellation* landed at Los Angeles airport after trip from Chicago, mechanics found gray cat in number two engine nacelle. It was none the worse for wear after its 1,800-mile trip. (Edw. Ramsey, Somerville, N.J.).

Solo Landing. Spotting plane headed for control tower, frantic operator tried to wave pilot away. Tower operator ducked under desk, plane missed tower by inches and made landing downwind on field runway, finally nosing over. Crash truck hurried to plane, then phoned tower it could find no pilot. Investigation proved pilotless plane had taken off from field 42 miles away, had flown for three hours, then made landing at Omaha Airport. (H. E. Polleys, Walla Walla, Wash.).

Quit Stalling. Pilot tested lightplane on windy day, discovered when cruising into strong wind, plane hovered over one spot. Enjoying the idea, pilot spent next 30 minutes hovering over various spots. When he finally landed at home field, attendant reported frantic phone call from excited farmer who had exclaimed, "One of yer planes is stalled up in the air out here and can't get down!" (D. A. Stephens, Detroit).

Att'n Readers:

If you have any news note oddities pertaining to aviation, send them to SKYWAYS, Box 17, 444 Madison Avenue, New York 22, N. Y. Five dollars will be paid the sender of each "oddity" printed. Contributions cannot be returned unless accompanied by stamped addressed envelope. The decision of the editors is final.



DESIGNING THEIR FUTURES

► This is not an aircraft manufacturer's engineering department. These are not engineers designing new aircraft. These are young men who are designing *their own futures*.

► At these drawing boards are Aeronautical Engineering students of Northrop Aeronautical Institute. Working on aircraft design and drafting assignments, they are in the midst of *planned* preparation for careers. Students today, tomorrow they will help write the future of Aviation.

► These far-sighted young men started designing their futures by realizing the vast opportunities in

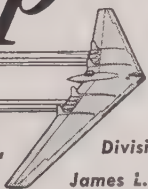
the great *Air Age*. Here at Northrop their career plan is being perfected.

► From first to last day of training they study, learn and practice their future duties in a true aircraft engineering environment. So thorough, so practical is their training that each graduate's first position is virtually a continuation of his student experience.

► Northrop graduates are in demand. Northrop graduates stand out. Their farsightedness, their selection of *Northrop* training, are rewarded by better starting positions, special assignments, steady advancement.

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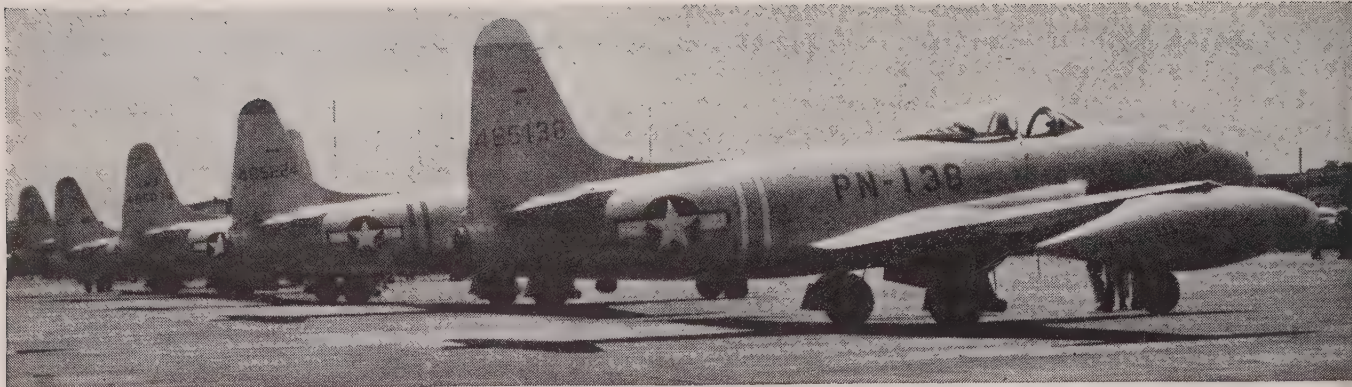
☐ Aeronautical Engineering • ☐ Aircraft & Engine Mechanics ☐

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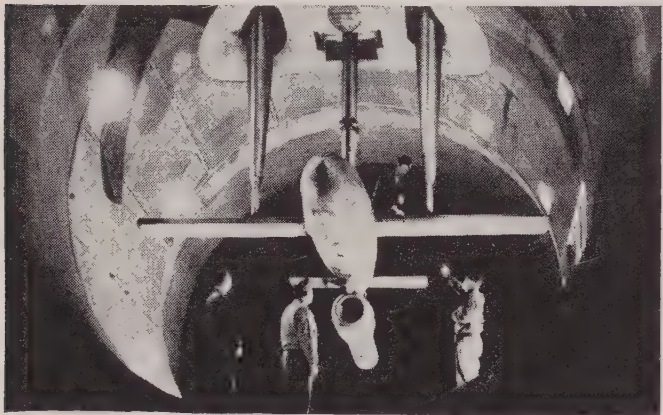
Check one: ☐ Veteran ☐ Non-Veteran



AIR FORCE ACT, as passed by House of Representatives of 80th Congress, authorized composition of peacetime USAF



AIRFIELD modernization is problem facing 81st Congress



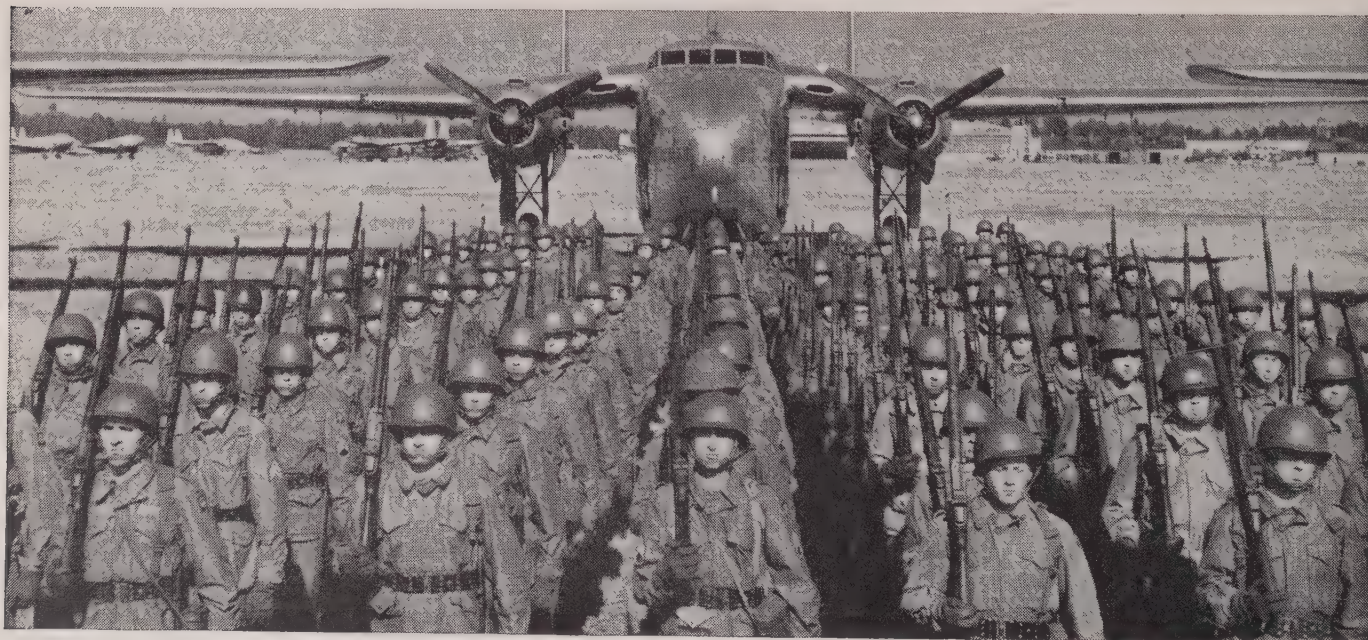
USAF is dependent on science, industry for development

AIR POWER and

ONE OF the most important problems awaiting solution by the 81st Congress has to do with the status of our national security in the air. The American people recognize that Air Power as tested and proven in World War II, emerged as the dominant weapon of modern warfare. We in Congress, however, have not as yet taken steps to insure that the United States Air Force, the primary instrument of our Air Power, is given the means to achieve the strength-in-being required to do the job of providing for our air security.

Since the birth of American Air Power at Kitty Hawk, the opponents of this third-dimensional striking force have labored unceasingly to retard its growth. They crucified Air Power's greatest disciple, Billy Mitchell. They kept aviational development confined in short pants within the

PERSONNEL, skilled and highly trained, are vital to the efficient operation and performance of security forces





NATIONAL security in the air requires the means for achieving the strength-in-being necessary to do the job

The 81st CONGRESS

Leo E. Allen

Member of Congress, Ill.



military establishment—where it wouldn't be conspicuous enough to attract a man-size appropriation from the Congress—and succeeded in both jobs.

When the overwhelming power of the *Luftwaffe* was loosed upon Poland, the United States had less than two dozen bombers. At the time when the Japs nearly de-fleeted our Navy at Pearl Harbor, the few Air Corps planes that were based on the island were actually restricted to flights extending "not more than 300 miles from the mainland."

Today, as we venture into a newer Age of Air Power, the fight

(Continued on page 42)

Congressman Leo E. Allen, 16th District, Illinois, has been an important figure in Washington law-making circles since early 1938, when he was elected to the Seventy-Third Congress. Since then he has ably served the Seventy-Fourth, Seventy-Fifth, Seventy-Sixth, Seventy-Seventh, Seventy-Eighth, Seventy-Ninth and Eightieth Congress; and has just begun his tenure of office as a member of the Eighty-First Congress.

As Chairman of the powerful Rules Committee of the House, Congressman Allen is known as the man who, in his exercise of power as Chairman "restored the dignity of that Committee." A student of military policies and strategy, he studies the concepts of battle, and is recognized as a keen analyst of the impact of organized warfare.—ED.

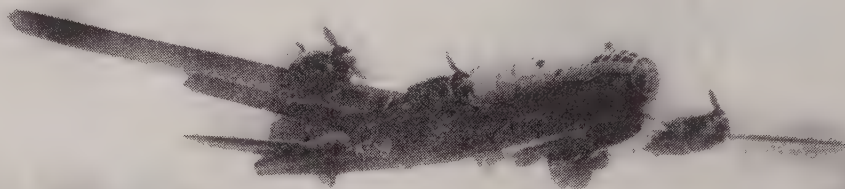
BAD HOUSING is causing tech men to shun re-enlistment



AIR FORCE needs funds for training, research, planes



USAF weather chasers



HURRICANE HUNTERS is name given 373rd Weather Reconnaissance Squadron flying RB-29's over Atlantic area

By **BRIG. GEN. DONALD N. YATES**

Chief, Air Weather Service, USAF

FORECASTING weather conditions for the air and ground operations of the Air Force and the Department of the Army is a job that has been assigned to Air Force's Air Weather Service for the last decade. By working hand-in-hand with the U. S. Weather Bureau and the Naval Aerological Service, Air Weather Service provides surface and upper air analyses of the entire northern hemisphere. In meeting its military commitments, AWS, with approximately 9,000 personnel, maintains 200 "fixed" and mobile surface observing and reporting facilities throughout the U. S. and in 26 foreign countries. Through the interchange of information with the Navy and the U. S. Weather Bureau stations spread over North America, the



CHIEF of Service is Gen. Yates

weather data gathered by the Air Weather Service is made available to meet U. S. civilian needs as well as all military requirements.

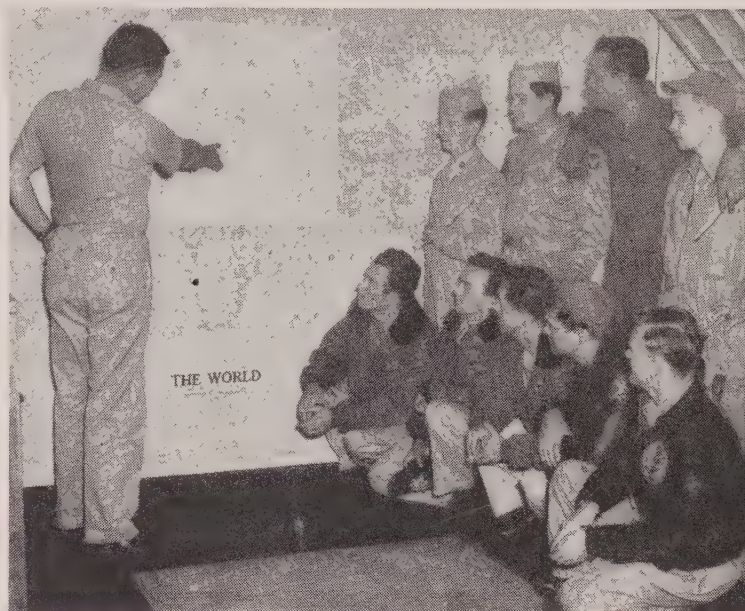
Most ground weather stations because of their "fixed" nature are limited in both the vertical and the horizontal range of their weather observations. In addition, the cost of installation and maintenance, taken together with certain geographical factors, place further limitation on the extent of coverage by these facilities. Ostensibly, vast ocean areas and other remote and uninhabited regions are inaccessible for weather reporting through normal ground methods. For this reason, every available means of extending the range of observations must be utilized. To accomplish this purpose, Air



WEATHER DATA from area in which weather is born is procured by 375th Squadron flying over Arctic regions

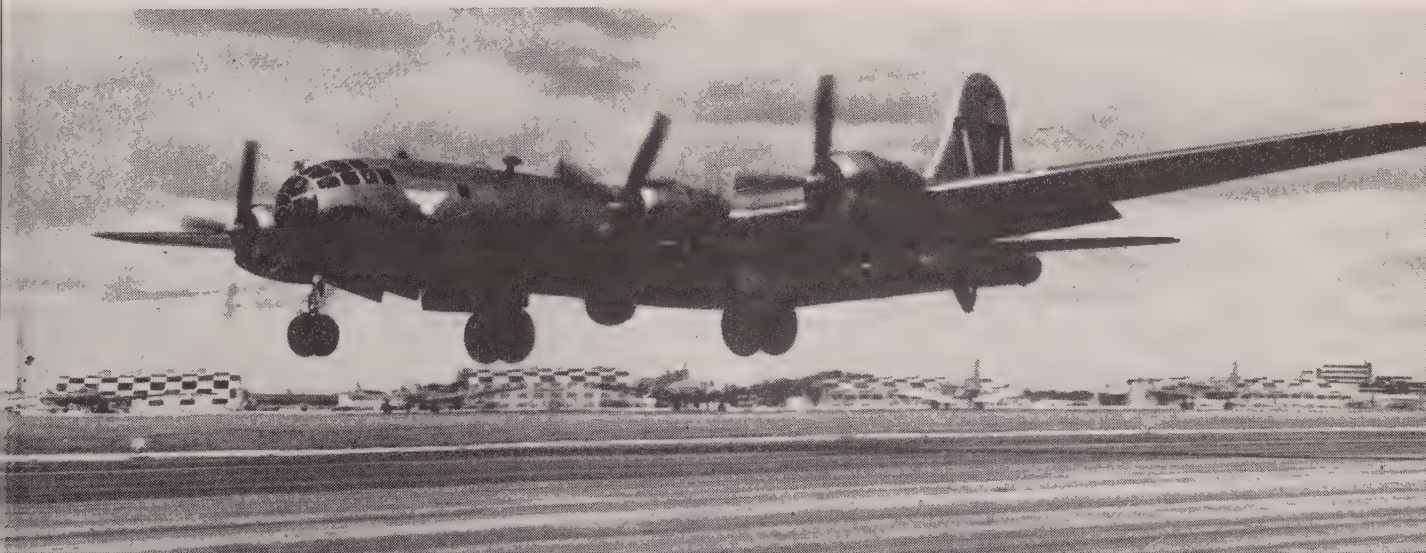
Weather Service gathers weather data from numerous sources, in addition to the exchange of information with the Navy and the U. S. Weather Bureau. Reports from ships at sea, and pilot reports from military and commercial aircraft are procured; weather information from many foreign areas is obtained through monitoring of standard radio broadcasts. Airways and Air Communications Service intercepts Station RFL at Khabarovs, Siberia for weather reports of northeastern Asia, Station MZU, Delhi, India and many others to provide this needed information for the Air Weather Service.

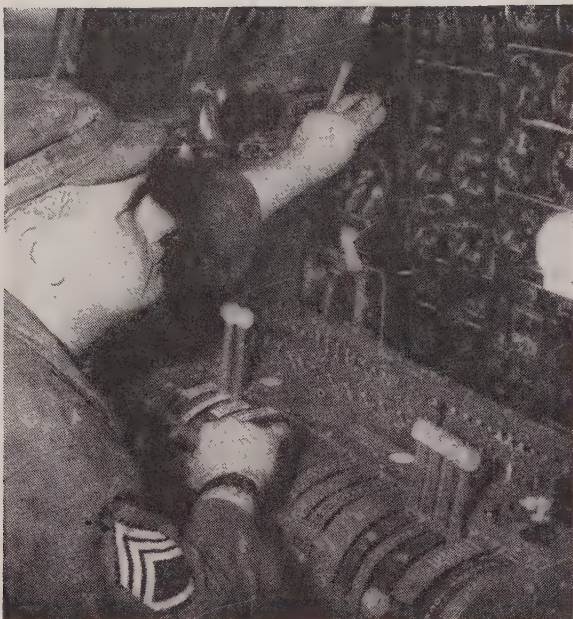
A glance at a map will reveal that the land areas comprise less than three-tenths of the world's surface and that a considerable portion of these land areas are uninhabitable, particularly in the polar regions. Since these ocean areas and polar areas are recognized as "source regions" for weather, they are of primary importance to Air Weather Service forecasters.



PRE-FLIGHT for crew of an RB-29 on weather mission is map study of weather they will encounter on their trip

AIR WEATHER SERVICE planes are converted B-29's, designated RB-29, equipped with weather analysis instruments





FLIGHT ENGINEER on RB-29 "winds up" number one engine in preparation for weather reconnaissance flight from 373rd Squadron's base located at Kindley AFB, Bermuda

However, it is readily apparent that the stationing of weather observing units at sea and in the Arctic is either physically impossible or presents many difficulties and involves prohibitive expense. The problem of gaining weather reports from such areas is being solved by the use of aerial weather reconnaissance. The area subject to weather reconnaissance is limited only by the range of the aircraft used. Modern reconnaissance aircraft are capable of traveling any place at any time for weather information. By means of aerial weather reconnaissance it is possible to obtain weather data not readily available from ground observation stations, such as severity of turbulence, the location of contrail zones, the vertical structure of storms, upper wind and flow patterns and the location and intensity of icing conditions.

Aerial weather reconnaissance may be defined as the observation of weather phenomena by means of aircraft conveying trained technical personnel and essential meteorological equipment. Air Weather Service reconnaissance aircraft — converted B29's (or RB-29's) — are equipped with modern-type instruments, designed particularly for this task or modified from the basic instruments used in ground weather station operations.

An excellent example of one of the earliest contributions of aerial weather reconnaissance to weather forecasting occurred during the early phases of the war, when the U. S. undertook to extend the program already initiated by the British. In 1943 the submarine menace and radio

security restrictions had eliminated almost all weather reports from ships at sea in the North Atlantic. The Air Force was faced with the gigantic task of ferrying thousands of combat and transport aircraft to European battle-fronts. The successful North Atlantic crossing of these aircraft demanded that the weather observing technique be stepped up to provide the most timely and accurate forecasts possible. A North Atlantic weather reconnaissance program provided the solution and in great measure, expedited the successful operation of these storm-ridden ferry routes.

The Air Weather Service reconnaissance program has adopted, generally, the policy of flying "synoptic" or "fixed" tracks in preference to tracks chosen to fit a daily weather situation. A synoptic track consists of reporting weather information from the same positions, at the same times, on consecutive days. It has been found that daily observations from the same locations are of more value to the forecaster than scattered, unsystematized observations. This procedure creates, in effect, a number of "fixed" aerial weather observing stations in areas from which reports would be otherwise unobtainable. The tracks flown by these reconnaissance units are based on an effective operating range of about 3,300 nautical miles; observations are taken approximately every 100 miles and relayed to a coastal ground weather station. Here a weather forecaster checks the (Continued on page 39)

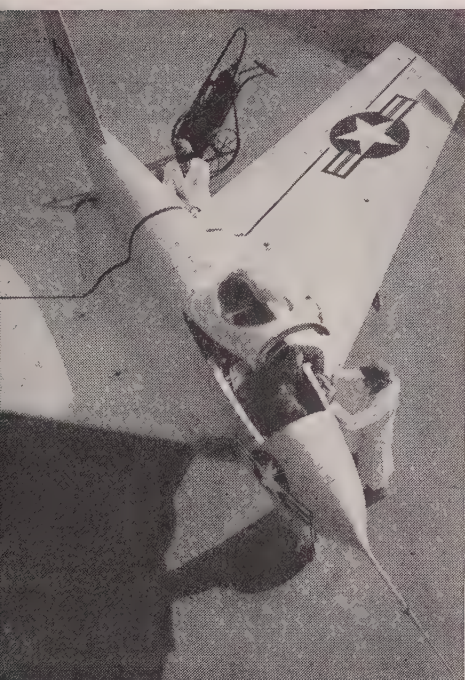
RADIO OPERATOR on board RB-29 on weather mission from 374th Reconnaissance base at Fairfield-Suisan, California, is Sgt. Norman Dufresne. His outfit covers Pacific





SEMI-TAILLESS X-4 is 20 feet long and has a wing span of about 25 feet. Elevons serve as both aileron and elevators

Northrop X-4



TEST PILOT for the initial X-4 flight was 28-year-old Charles Tucker of Northrop, a veteran Northrop test pilot



ONE OF the latest and newest of the USAF's research planes, the Northrop X-4, recently successfully completed its first test flights at Muroc Air Force Base. Test pilot was 28-year-old Charles Tucker, a veteran Northrop pilot.

The initial flight of this swept-wing "flying lab" lasted 18 minutes, and was for the primary purpose of familiarizing Tucker with the control response of the tiny craft.

The Northrop X-4 is one of the smallest piloted aircraft ever built for the USAF. Its wings are extremely thin and are swept-back at a sharp angle. Gas turbines power the X-4, thus making it capable of flights of longer duration than the rocket-powered X-1 developed by Bell. Cockpit of the X-4 is equipped with an ejection seat. Other information is restricted.



X-4 was not designed to fly faster than speed of sound, but is for exploration of subsonic speeds



PILOT'S REPORT... *Swift*

SWIFT 125 is a trim all-metal two-placer that looks like a scaled-down pursuit plane. It was designed for speed, safety

By **DON DOWNIE**

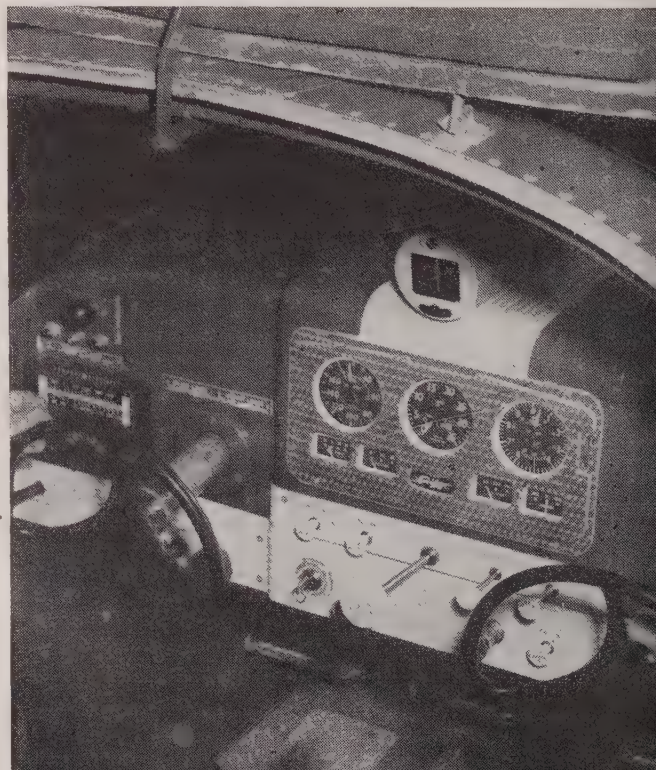
(This is another in a series of impartial pilot reports. Next month, the Luscombe SEDAN.)

WHEN you've gotta go, it's speed that counts. That's what the new *Swift* "125" is designed for—speed. It's a trim little airplane that has all the appearance of a scaled-down pursuit plane, but it isn't the "hot-to-handle" ship that "scuttlebutt" would lead you to believe.

This SKYWAYS' pilot report is strictly the first impression of a new airplane since this reporter had never before even sat in a *Swift*.

Factory representative on this flight was William H. Hite, pilot for the Daugherty Flying Service in Long Beach, California. Our *Swift* was NC 3852-K, a little airplane with 115 total hours on its computing tachometer and quite a history in its log books. A previous pilot, while returning from a charter trip to La Paz in Baja, California, had jerked the gear up too soon on take-off from Chapella dry lake and was unre-

COCKPIT photo of *Swift* shows its neat instrument panel. Left of control column is GE radio. Center knob in lower panel is throttle. Left of throttle are cabin heat, carburetor heat; to right, mixture, parking brake, starter



ported for three days. Later this same ship was dropped off a truck during a parade in Santa Barbara and one wing had to be replaced.

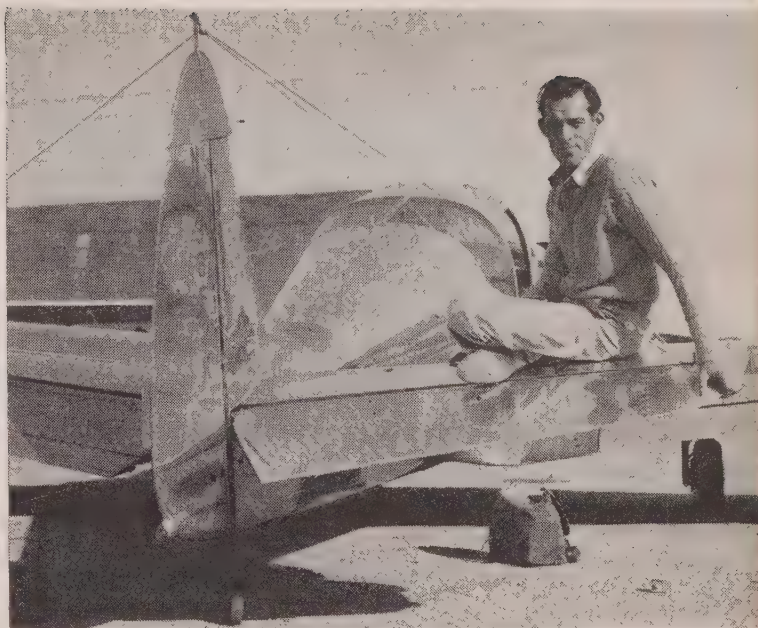
In spite of its battered background, however, NC 3852-K looked shiny and new as it was wheeled out of the revetment-hangar in the corner of the big Long Beach Municipal Airport. Unusual Southern California weather included rain showers, icing conditions above 5,000 feet and assorted low ceilings, so we limited this trip to a tour of local airports.

Bill Hite showed us around the all-metal "125" before we climbed aboard. Just behind the big spinner of the Aeromatic prop, the cowling is fastened with two long-handled latches on each side.

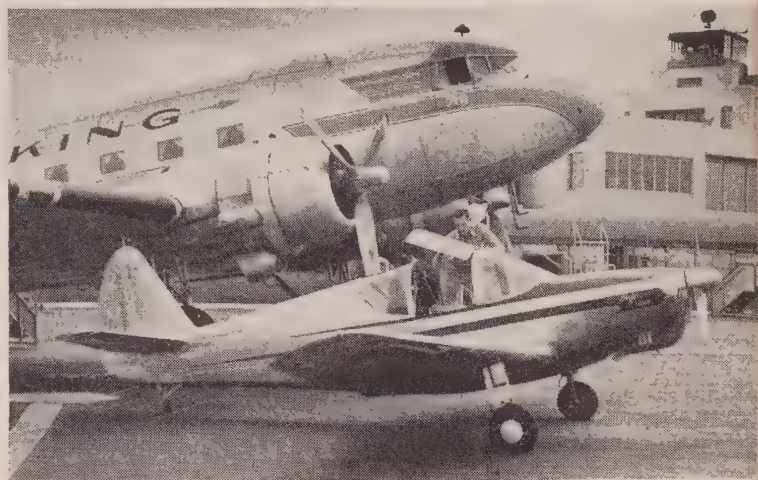
"Don't take off with them loose," cautioned Mr. Hite. "... unless you want cowling flapping in your face."

The wing has a small spoiler strip, similar to the three-cornered leading edge of the *Stearman*, located inboard of the landing gear to make the center section of the wing stall before the tips. Wing-tip slots aid in maintaining aileron control in slow flight. Outboard of the step, flaps and ailerons take up all the trailing edge of the wing except for the removable tips.

"This thing is really built," said Mr. Hite as he pointed out the large rivet heads. Then to prove it he climbed up on the horizontal stabilizer, resting his full weight on the up-swept cantilever structure. We gulped and hoped he knew what he was talking about because that tail surface would be needed in a few minutes when we

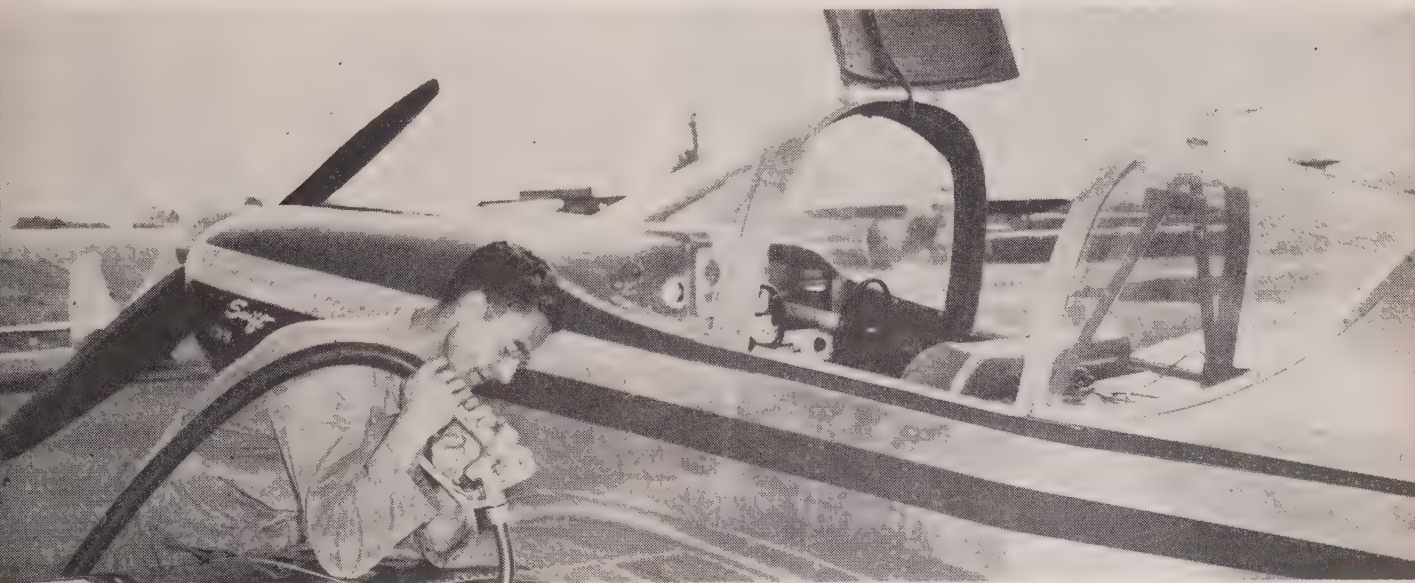


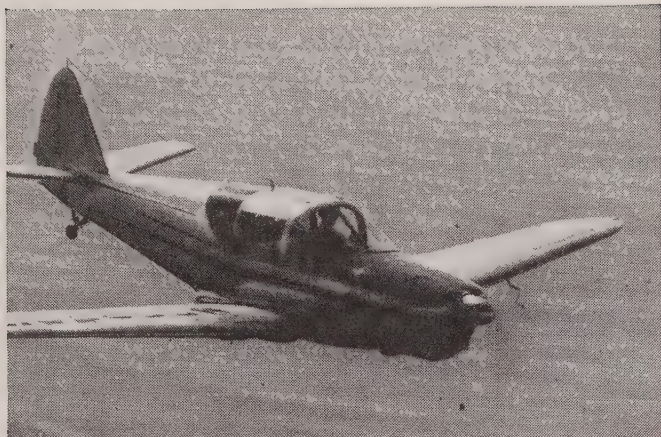
SWIFT 125 is one of the sturdiest built planes on the market, and to prove it Hite sat on its full-cantilever tail



MODEL that Author flew for pilot's report was this one parked next to DC-3 at Lockheed Air Terminal in Burbank

RANGE of the little all-metal Swift without auxiliary fuel tank is 425 miles . . . or three hours at about 140 mph





CONTROLS of the Swift are very sensitive, requiring a pilot to handle them lightly to keep from over controlling

took off. After checking the ship, we opened the hatch and climbed in. As in all low-winged airplanes, getting into the ship is a bit of a chore . . . if you are long-legged and tall. But the *Swift* is easier than most little planes to enter. You step on the seat, sit against the top of the back rest and simply slide down. Once seated, there is plenty of leg room.

As expected, there were a number of switches, levers and knobs that needed explanation. It seems that you can't have a retractable gear and flaps without these "gimmicks" in the cockpit. We checked over the panel from left to right, top to bottom. Directly in front of the pilot is the two-way GE radio. Above the radio are three landing gear position lights and a bright red warning light. This large blinking indicator is a

DESIGN difference between latest model Swift (foreground) and one previous to it is in canopy construction



gear-up reminder that flashes when the throttle is closed to 1900 rpm and the wheels are still up.

Regular engine and primary flight instruments are in the center, with the compass mounted above the panel. At the far right, under the control wheel, is a series of Off-On switches for radio, landing gear, flaps, generators, navigation and landing lights.

Coming back across the bottom of the panel, we found three identical push-pull knobs just to the right of the throttle. These operate the starter, parking brakes and mixture control.

To the left of the throttle is the cabin heat control and the carburetor heat; both with knobs



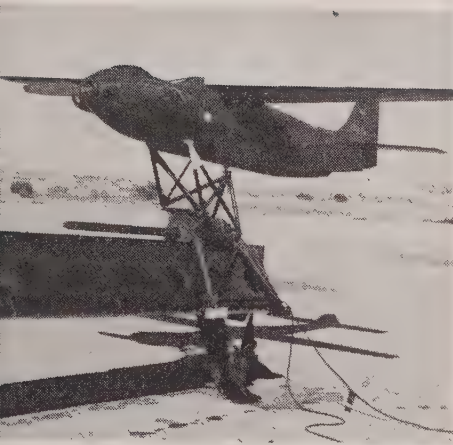
COCKPIT entry is similar to all low-wing ships, although getting into Swift is easier than most others

identical with the starter, mixture control and parking brakes. Below the heat controls are the master switch and ignition. The gas gauge is located between the seats.

The gear and flap controls are located behind the left-hand wheel. The gear is raised by flipping a lever after pushing in a beveled red safety button. The flaps merely have a large knob that turns from the up to the down position. Neither the gear or the flaps will operate unless the master switch for each is turned on at the far right of the instrument panel.

We started the *Swift* and taxied out from behind the revetment toward the taxi strip. The "125" has a steerable tail wheel that will kick-out into a full swivel unit with the slightest application of brake. It's almost too easy to turn. Visibility on the ground, while not equal to the tricycle jobs, is

(Continued on page 40)



Flying TARGET

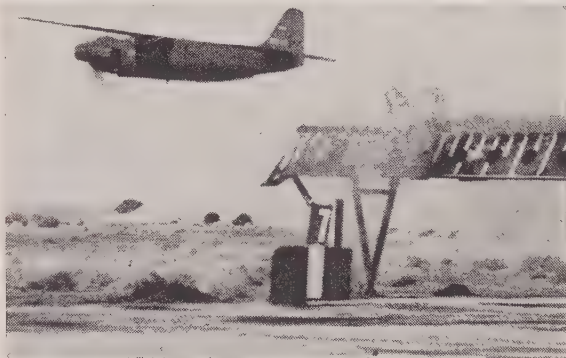


FLYING TARGET OQ-19A is a streamlined "clay pigeon" twice as fast and twice as large as any of the pilotless flying targets yet developed. It is rocket catapulted into the air and remotely controlled in flight

NEWEST, biggest and fastest of the USAF's flying target family is the OQ-19A, designed to be used for aircraft, anti-aircraft and flexible gunnery practice. Remotely controlled from ground to air, this puppet plane is capable of high-speed dives, loops, barrel rolls, wing-overs and steep banks. It will maintain flight for one hour without refueling.

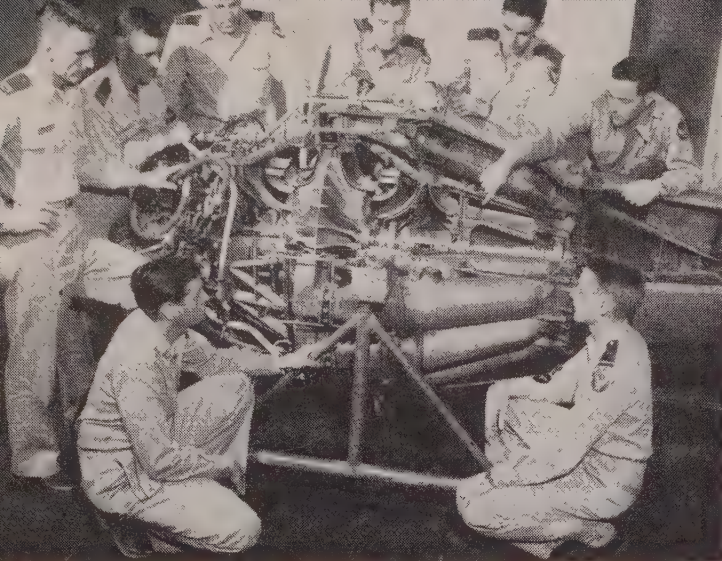
In use, the OQ-19A is fastened to a 90-foot catapult. It is then launched by a rocket which boosts it along the catapult at a take-off speed of 80 mph. The rocket car used in this operation is stopped at the end of the catapult track by hydraulic snubbing device.

Once in flight the OQ-19A is capable of hitting a speed of 220 mph. Flying at a 200-yard range, this 300-pound target "plane" gives the appearance of a normal-sized pursuit ship at 500 yards distance. At any given time, the operator of the target can automatically return the target to the ground via a cargo-type chute. ✈

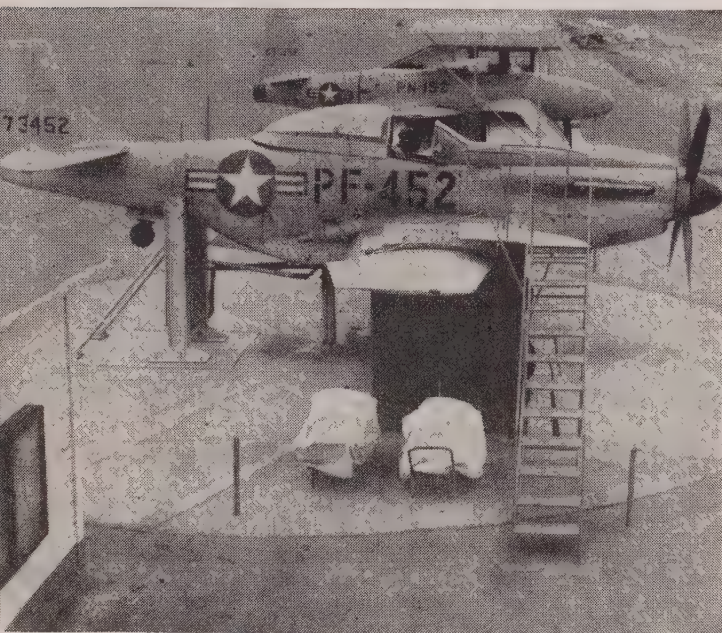


TAKE-OFF speed of the OQ-19A is 80 mph and its flight duration is one hour. It is returned to ground via chute

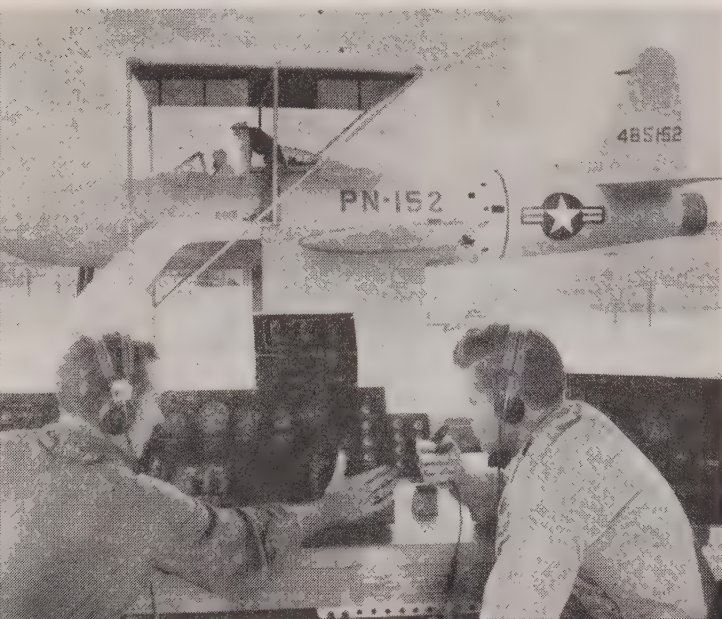




USAF CADETS at Williams Field, Chandler, Arizona, study details of jet powerplant on cutaway engine of same type that powers F-80. Flight training starts on the ground (below) in these anchored "Captivairs" ... Mustang and F-80



CHECK RIDE in "Captivair" is controlled by instructors in control room who simulate flight by changing instrument settings



Captivair Class

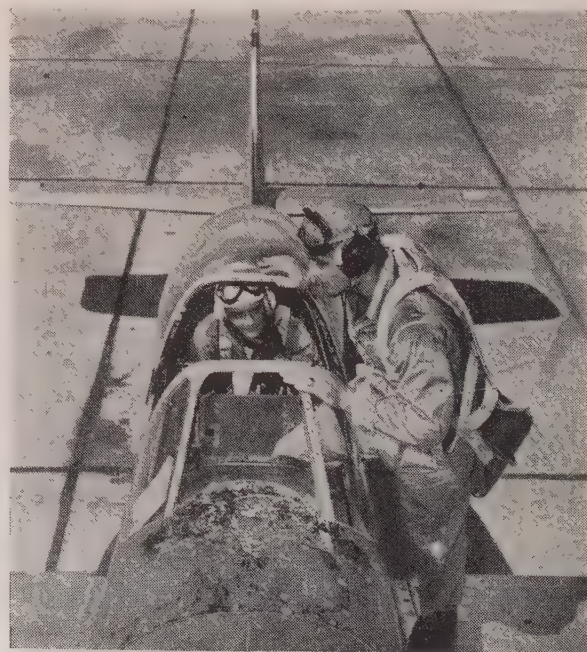
ONE OF the Air Force bases at which jet fighter pilots are made is Williams Field at Chandler, Arizona. Here, after four months of intensive training, an Air Force cadet becomes a full-fledged USAF jet pilot, an airman with the technical know-how to insure the maintenance of the USAF's number one position in the world's field of fighting forces.

When the cadet arrives at Williams, he already has had 170 hours flying time in conventional aircraft and eight months of ground school behind him. At Williams he begins his instruction in Advanced trainers . . . first the T-6 (formerly AT-6), then the F-51 *Mustang*. Following that, if he's lucky and all has gone well, he'll take on the F-80. A cadet must fly a jet 30 hours before he wins his wings.

One of greatest aids to jet training is the "*Captivair*," an F-80 that provides "flight time" without ever leaving the ground.



TRANSITIONAL training calls for check out in piggy-back Mustang. Student climbing in is Lieut. "Doc" Blanchard





CADETS receive 30 hours in jets (familiarization, formation and navigation) before graduation as Air Force pilots

MOBILE CONTROL truck stands near end of runway. Via radio, instructor gives advice to student on first jet flight



THREE PLANES that cadet gets flight training in are T-6, then F-51 Mustang, finally F-80 (foreground)





SKYWAY TO BERLIN

**UAF Airways and Air Communications
Service brings 'em in 'round the clock**

By ORV SPLITT

RAIN lashed by sharp northerly gusts pelted against the windows of the Templehof control tower and swept across the runways. Inside the Douglas C-54 *Skymaster* ("Big Easy 135—just in from Rhein-Main"), the Lieutenant snapped off the master switch, slipped out of his parachute, and edged his way past the sacks of coal stacked along the cargo deck. By the time he reached the cargo door a crew of DP stevedores had already transferred a dozen of the 110-pound bags to the big semi-trailer backed against the plane.

Outside, the corporal in charge of the unloading crew looked out from the shelter of the *Sky-*

master's wing and shook his head at the young pilot:

"How did you find this joint today, Lieutenant?" he asked. "I got lost three times just driving the six miles from the storage depot."

The Lieutenant leaned out into the rain. He pointed toward the opposite end of the field where a squat trailer could be dimly seen through the slackening downpour. Several antennae and a short rectangular tower sprouted from its roof.

"It's no secret," the lieutenant said. "The next time you get a couple of hours off drop by that black and yellow bungalow and you'll find the answer. In weather like this I just steer. The boys in the trailer tell me where to go."

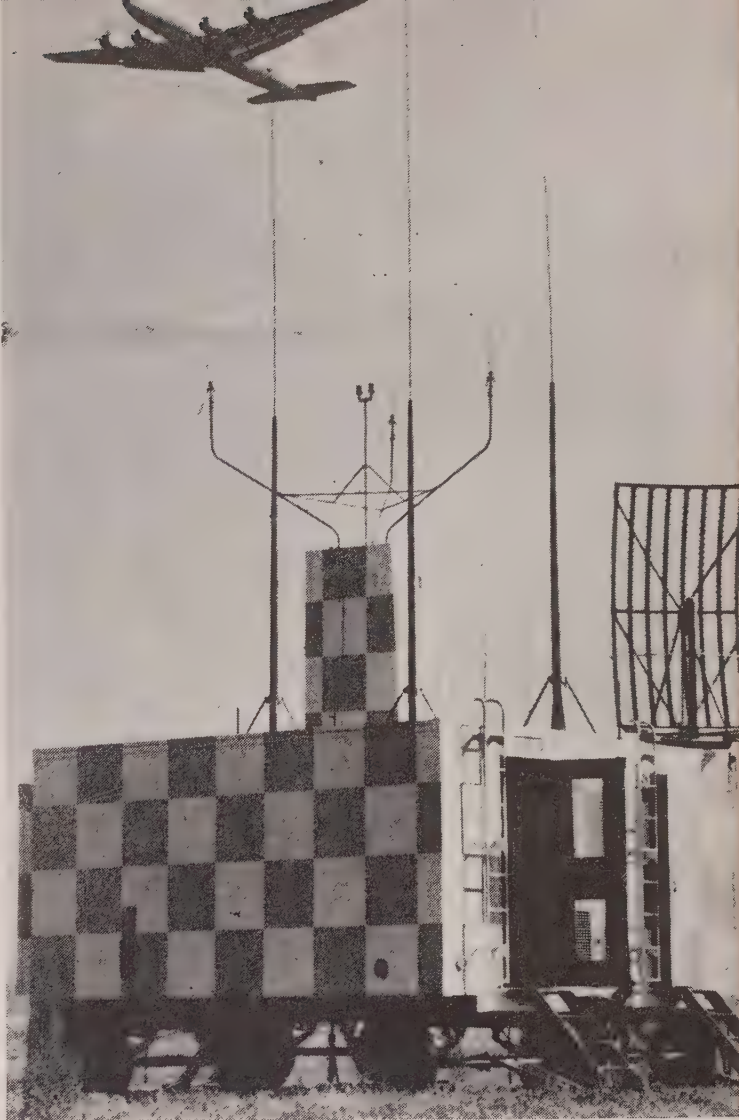
The "boys in the trailer" were, of course, a GCA crew of USAF's Airways and Air Communications Service, the Military Air Transport Service auxiliary that operates and maintains Air Force airway communications, airdrome control, and radio aids to air navigation throughout the

world. Today in Germany, during its tenth year of service, AACS has really come into its own. Without GCA and the many other communications and navigational aids set up and maintained by this elite organization, the unrelenting day and night shuttle of MATS C-54's into Berlin's Templehof would soon dissolve into a strictly fair-weather operation.

To get some idea of the magnitude and importance of this particular phase of Operation Vittles one has only to view the traffic charts and statistical graphs in the office of Lieutenant Colonel J. R. Guthrie, wartime chief of "over the Hump" air communications and now the AACS European Wing Commander. The jagged lines all move upward. On some charts they have already shoved their way over the top.

One chart shows that AACS radio operators during one month averaged a radio contact with a plane every 15 seconds, 24 hours a day. At Templehof—easily the world's busiest airport—the control tower alone is averaging better than one contact per minute, and the line on the graph continues to climb. Another chart records that GCA landings at Templehof average 1,000 per month while still another shows that 3,000 were handled during a single month at Wiesbaden. And there are lots more charts and graphs recording equally impressive achievements.

These statistics come to life when you make the swing around the Vittles circuit. You can start this observation trip from either Wiesbaden or Frankfurt, the two USAF bases in the U. S. Zone where Berlin-bound cargo is loaded, or at



MOBILE GCA UNITS make "Operation Vittles" an all-weather and around-the-clock shuttle service for supplies of food and fuel for blockaded Berlin. In five months, the airlift flew 409,256 tons of food and fuel to Berliners





BAD WEATHER failed to hold up either British or U. S. aircraft, thanks to GCA. British have made 30,850 flights



CONTROL TOWER operators at Berlin's busy Tempelhof Airdrome average better than one plane contact per minute

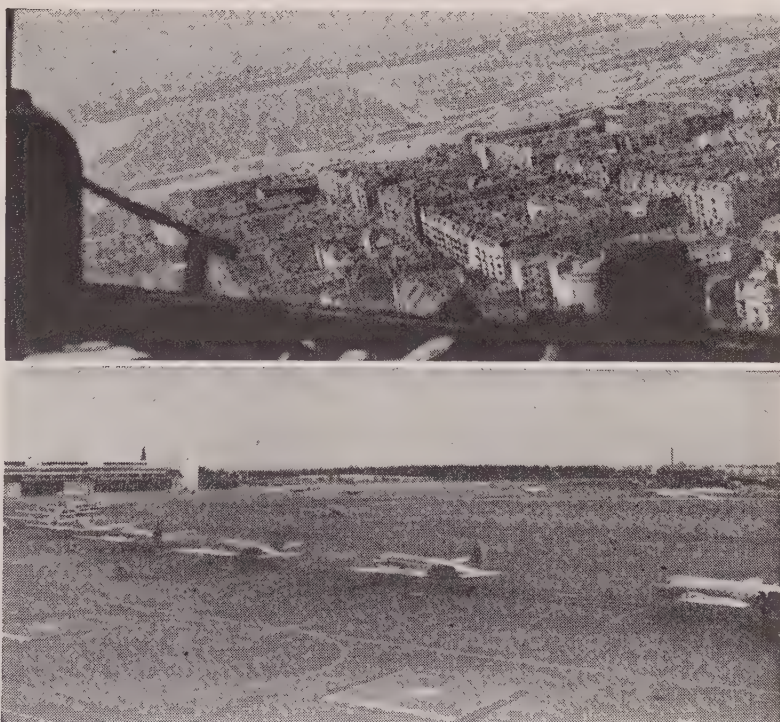
Fassberg in the British Zone. We flip a coin and start from Frankfurt's Rhein-Main airbase.

First stop is the pilots' briefing. We've been told to report at 1100 hours with the crews assigned to the noon block. The AACCS Captain who shows us around explains that the term "block" means the group of airplanes assigned to fly the corridor in the same formation. Noon, of course, is the time designated for the first plane in the block to take off. "Under the block system," he tells us, "a C-54 takes off every three minutes over a period of approximately two hours." This system insures that a maximum number of round trips to Berlin—usually six—are made by each operational aircraft every 24 hours. It works out so that the first plane in the block is returning from Berlin at about the same time the last plane is taking off. Usually, 70 *Skymasters* make up a block.

Briefing is short and simple. Although all flights are made under Instrument Flight Rules (IFR) each pilot does not file separate clearance. Communications (Continued on page 45)



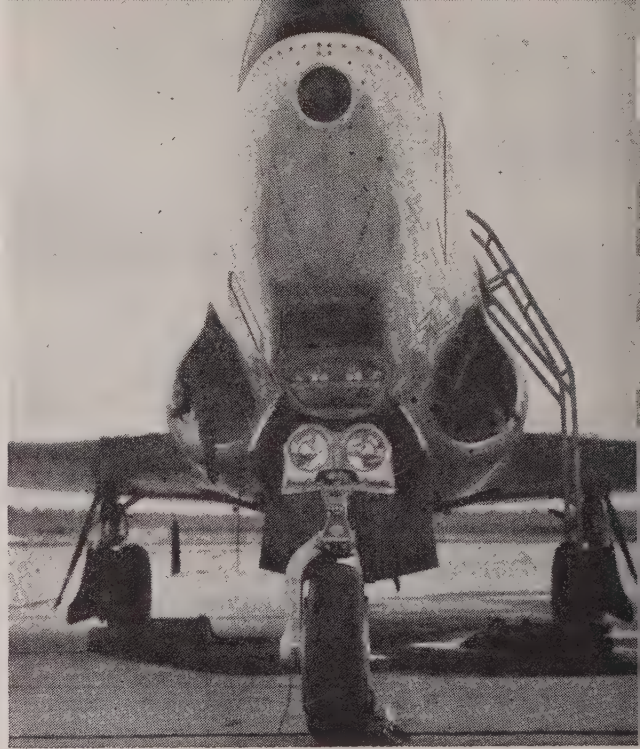
COMMANDING OFFICER of Airways and Air Communications is Gen. W. Smith



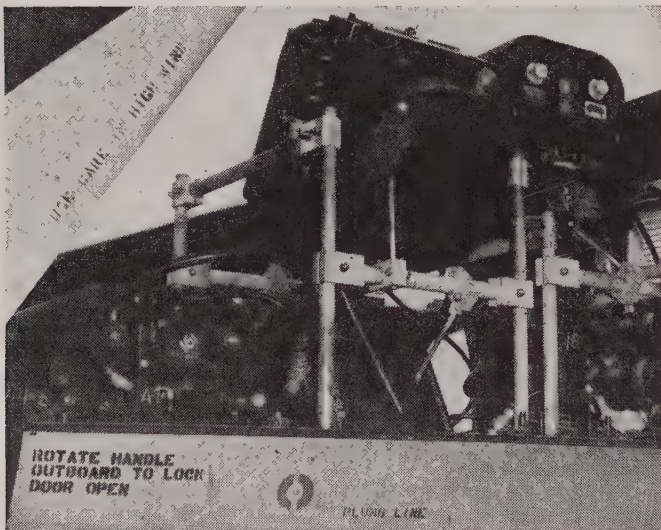
AIRVIEW of Templehof (top photo) was made from cockpit of C-54 on final approach. Photo (bottom) shows airport



PHOTO EYES of the USAF Photo Reconnaissance planes see through camouflage to get picture of important base



NOSE-ON shot shows camera "eyes" of RF-80. Circular window is for dicing camera, others are for vertical shots



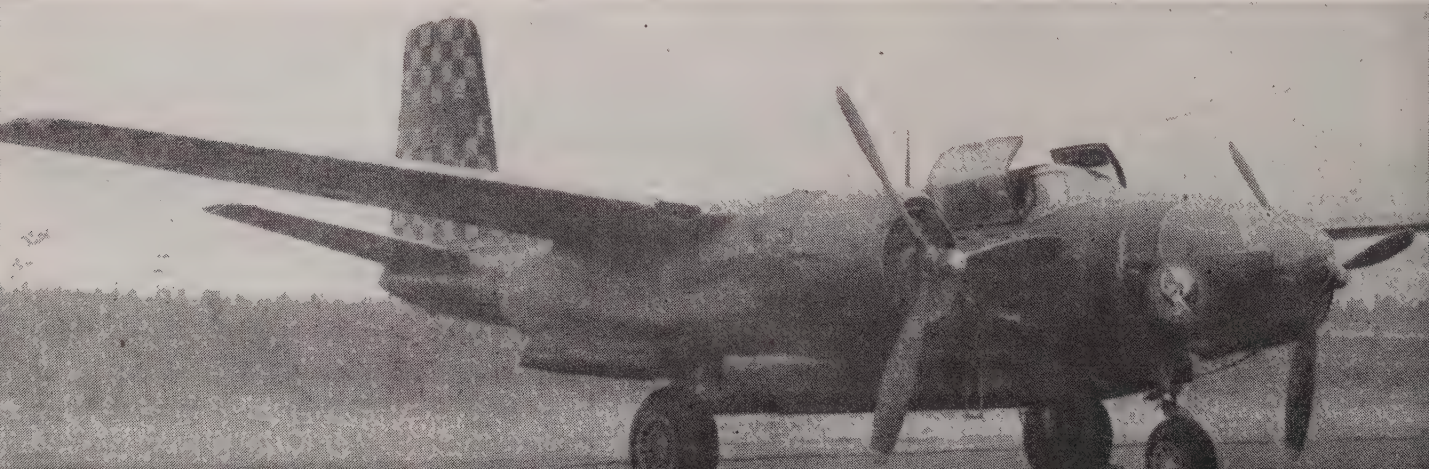
CAMERA installation in nose of RF-80 includes K-22's set for vertical and oblique in a tri-metrogon arrangement

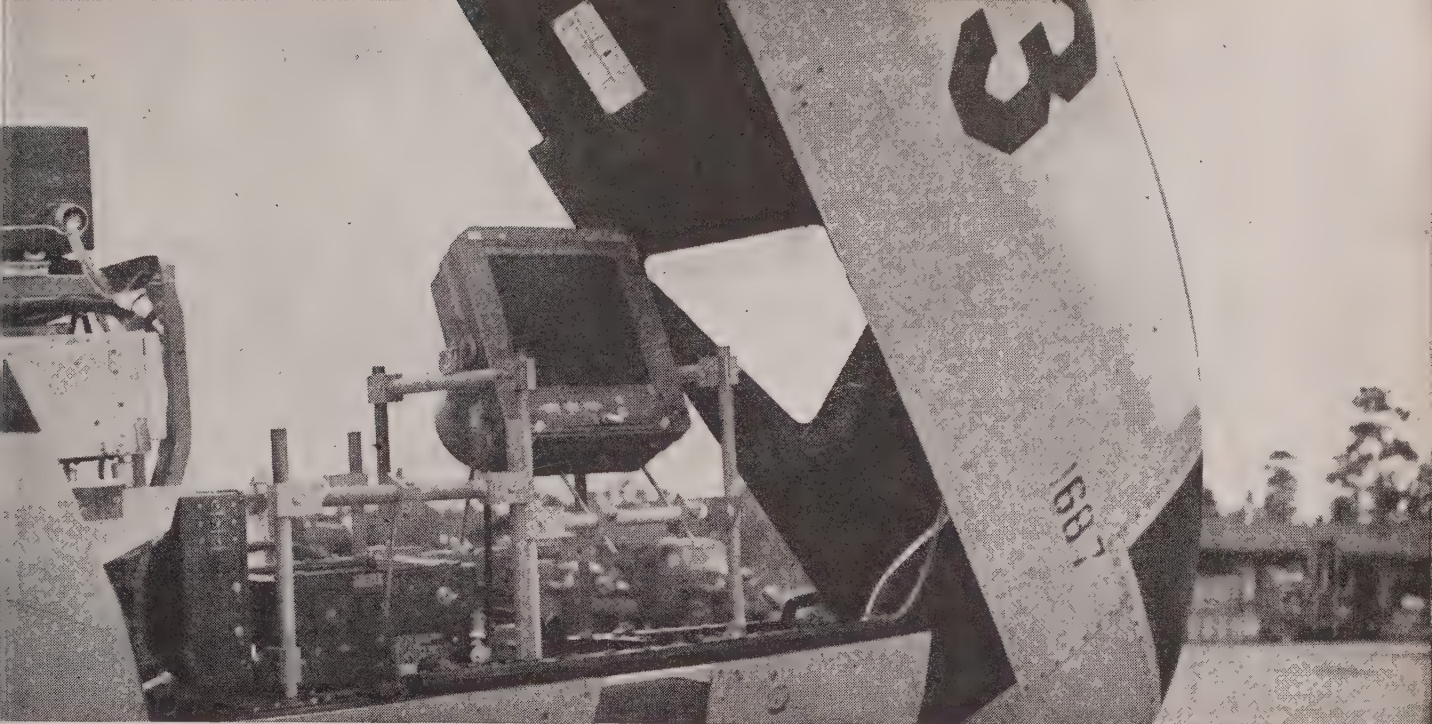
Photo Eyes

By **JERRY LEICHTER**

SOME DAY in the future a ground-controlled robot aircraft will be flown to a distant pre-determined point, cover a fixed aerial pattern while automatic cameras record the scene below and then, when the job is completed, the plane will be recalled to its home base. Technicians will unload the cameras, process the film and rush prints to tactical headquarters for intelligence analysis, and use in tactical planning.

RECON VERSION of the Martin Marauder, designated RB-26, is one of photo ships used by the 363rd's recon units





CAMERA BAY of the jet RF-80, in this close-up photo, shows 12-inch K-22 set for left oblique through window

of the USAF

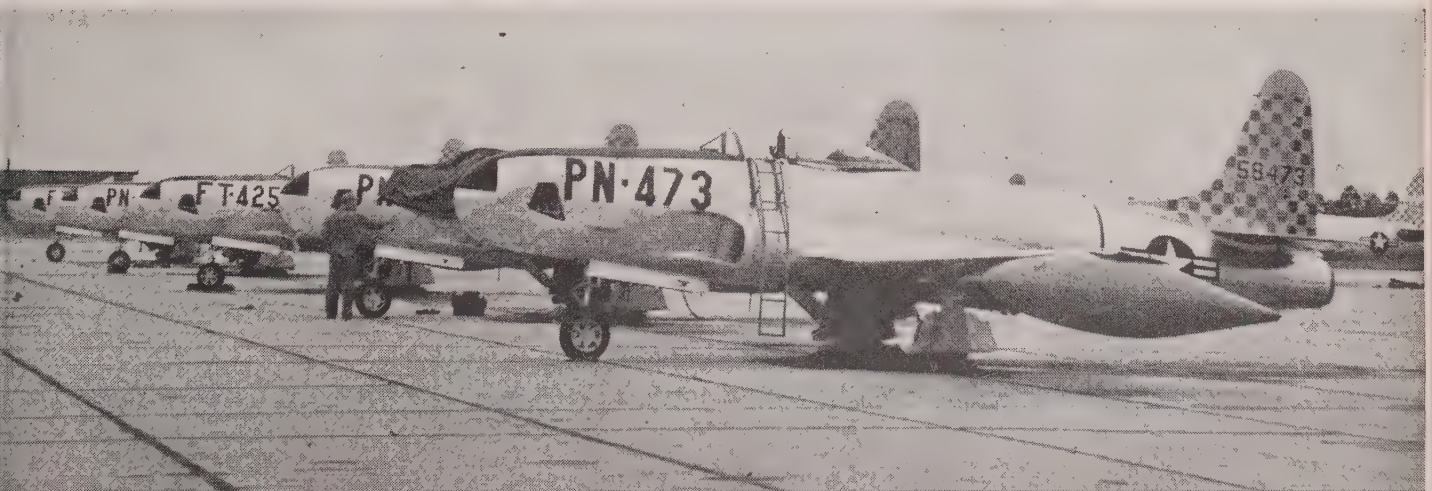
The robot reconnaissance planes may come in any size from the midget type, just large enough to carry fuel, controls and a single camera, to a giant equipped to range over thousands of miles, complete with several types of photographic units to record complete panoramas.

However, that's all in the future. The generals might find it a hellish proposition in times of urgency to fit wings to robot blueprints. Today the job will be done adequately and expertly by men and their machines; by good pilots flying the best camera platforms available. Two recent newsworthy (Continued on page 46)



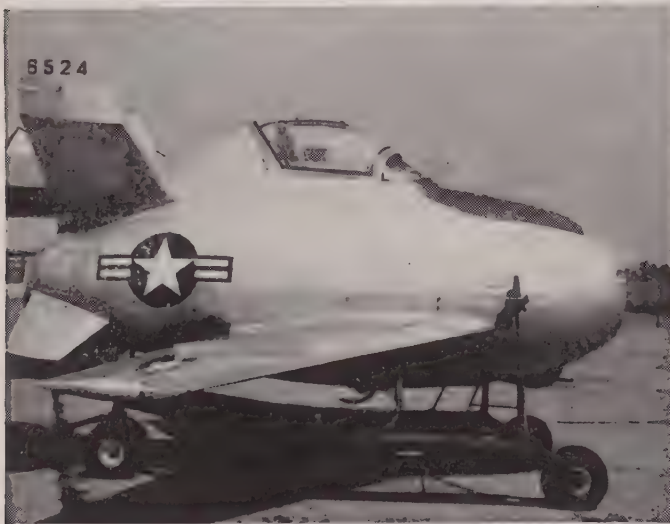
COMMANDING OFFICER of the 363rd Tactical Recon Group, based at Langley in Virginia, is Col. James M. Smelley

CHECKER-BOARD Group, as 363rd is known, is round-the-clock unit employing conventional as well as jet ships





JET XF-85 here is being raised into bomb bay of B-29. Rear view of the AF's '85 shows its "X" configuration



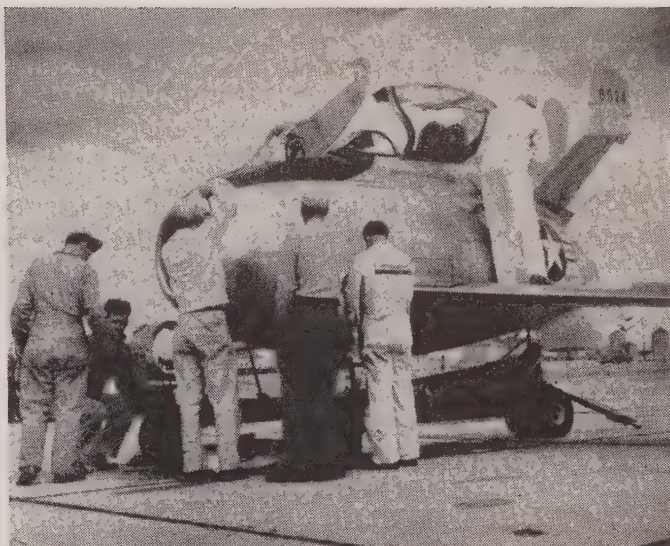
JET PARASITE

PARASITE JET has no landing gear whatsoever, making it necessary to transport it on the ground via dolly. Once airborne and ready for launching, XF-85 is dropped from bomb bay, then released from its harness





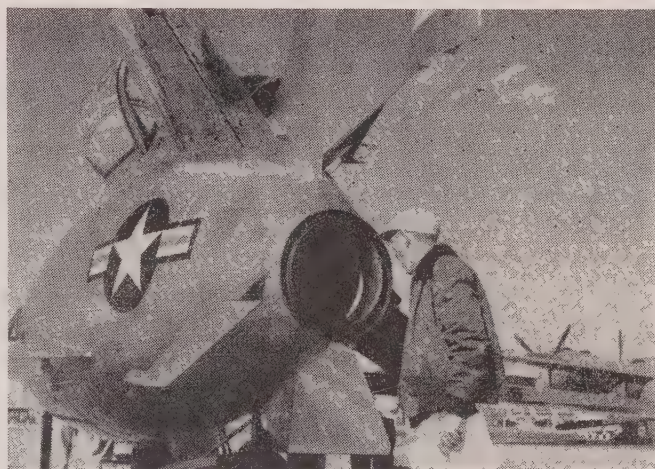
TEST PILOT who first flew the parasite fighter was Edwin Schoch who flew with Navy during World War II



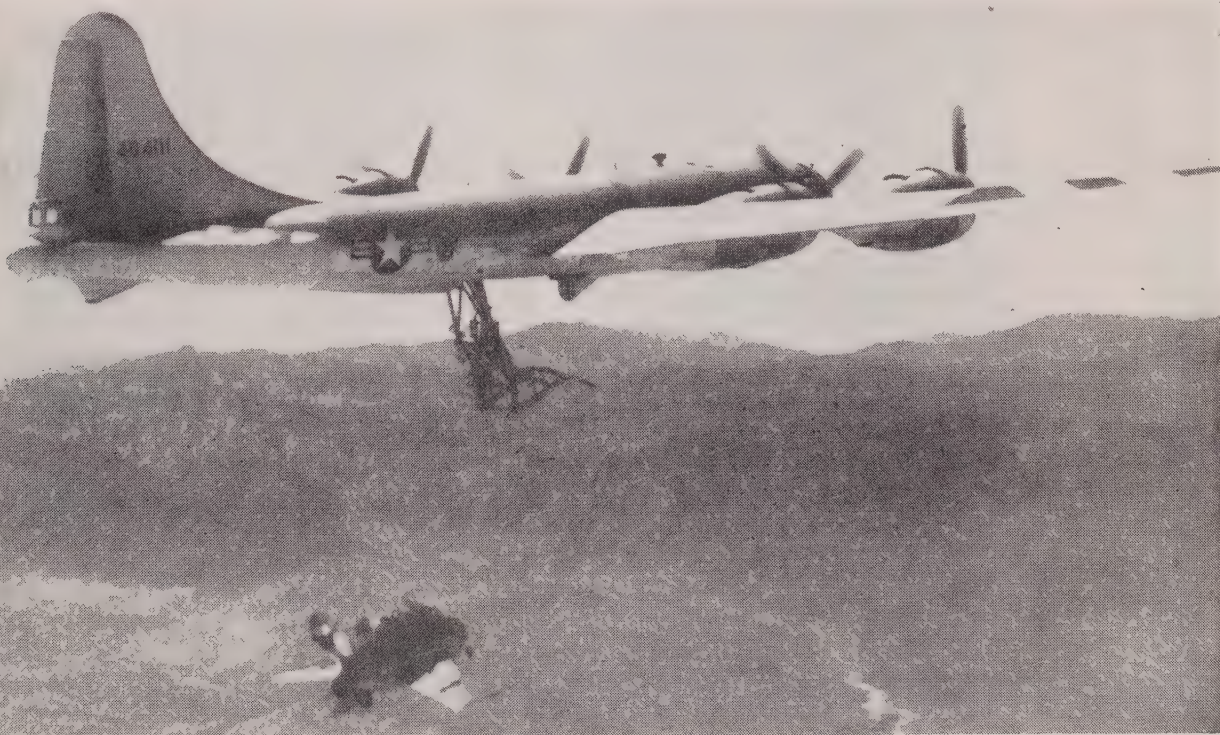
MECHANICS check over the XF-85 at Muroc, scene of ship's first test flights. Note retrieving hook atop nose. Between flights inspector (below) checks tail pipe

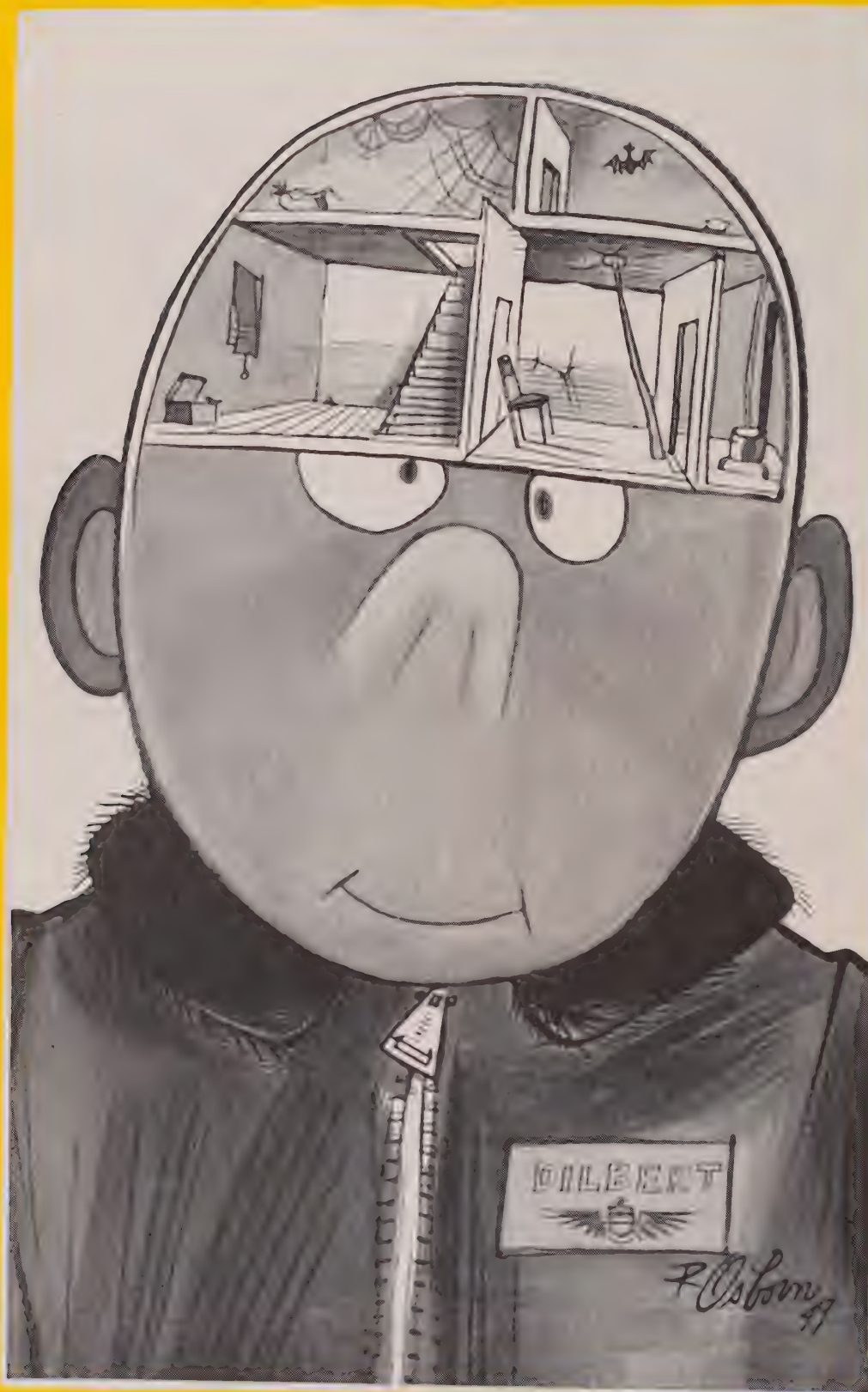
ONE OF the newest developments for the Air Force is a jet ship designed to never touch the ground. The McDonnell XF-85 is based in a larger plane, and designed to take-off and land in mid-air. Although it was intended to be launched from the bomb bay of a B-36, first flight tests were made from a modified B-29.

All the equipment carried in a standard fighter is compressed into the stubby fuselage of the '85. Added to it is the mechanism which permits it to be hangared and launched from the "mother" ship. The parent plane fulfills the same function as an aircraft tender for fleet operations. The XF-85 is refueled while stored in the bomb bay. If necessary, the XF-85 can be jettisoned after pilot is hauled aboard "mother" ship. ✈



FLIGHT completed, the XF-85 is flown back to "mother" ship, maneuvered into harness, pulled back to bomb bay





Dilbert's upper stories explain a lot of things!



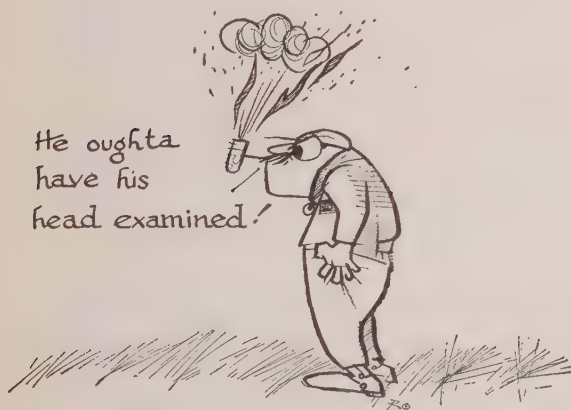
By Seth Warner and Robert C. Osborn

Slightly Unconscious—Dilbert made the following statement after his engine coughed and quit on him two hours after take-off:

“When my engine quit, I immediately turned on full preheat, worked the throttle and gave the wobble pump several strokes, but . . .

“As soon as the plane hit and nosed over, I realized that the gas tank I was using had run dry and that the engine stopped because I failed to turn my fuel selector valve to the left tank.”

How is that for snappy mental reaction!?

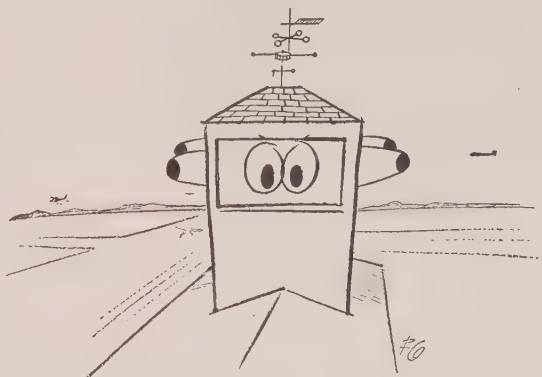


Tower Responsibilities—During night flying operations, a plane with a broken tail wheel stalled on the taxi-way. The tower correctly broadcast a general warning, giving the exact position of the stalled airplane.

At this time, Dilbert was warming up, with his radio not yet turned on. After checking his mags, he started taxiing out for take-off. The

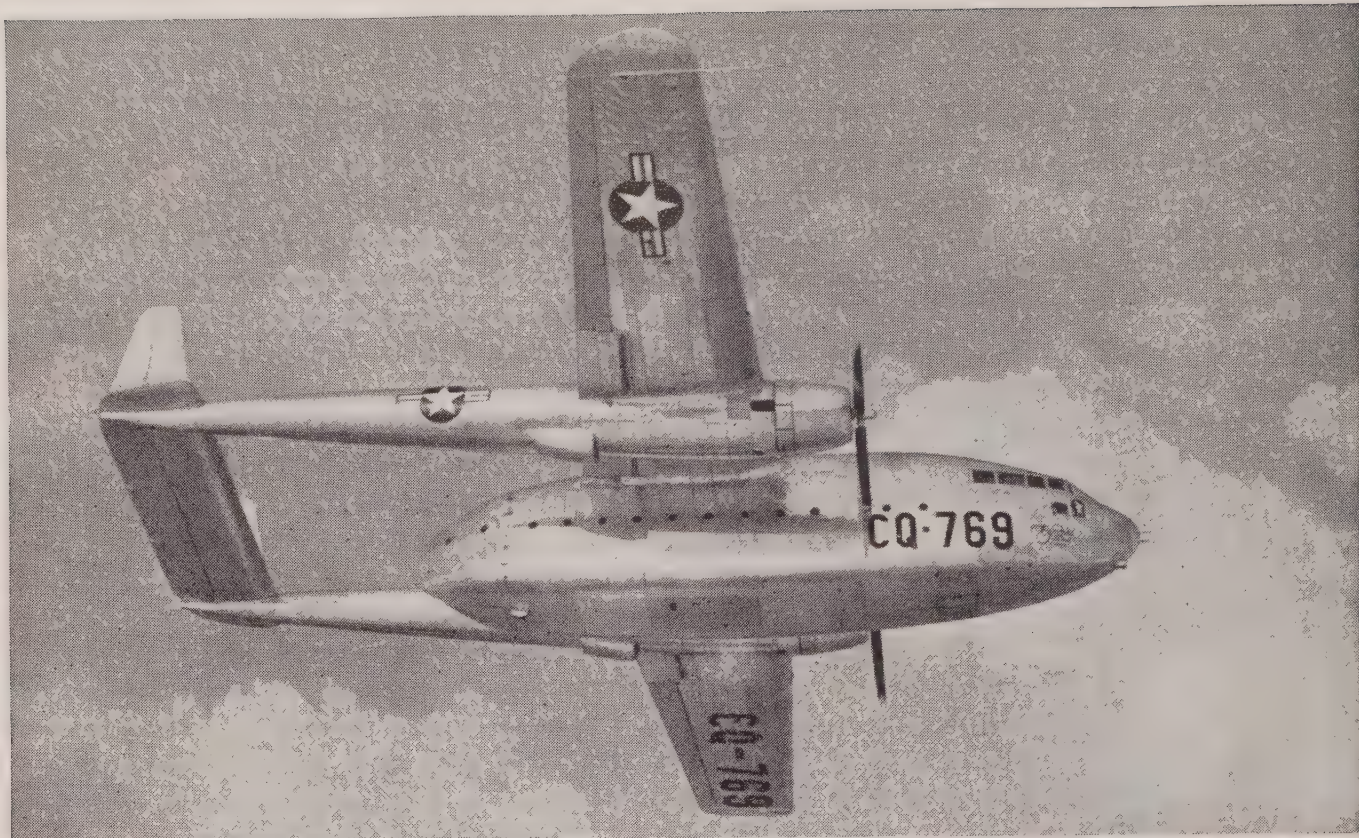
tower neglected to call him about the stalled plane, so Dilbert taxied his buzz saw half way up its fuselage.

Reports such as this show that tower operat-



ors are not yet doing *all* they can in the way of flight safety. In this instance, the tower certainly should have seen the danger of collision when Dilbert started taxiing toward the stalled aircraft.

Tower operators are no exception to the rule that in aviation no one can afford to take anything for granted. They are in an excellent position to see actual and potential hazards, and must be ready at all times to take immediate action to forestall them. Despite the fact that Dilbert received no warning of the stalled plane and that there was a confusion of lights in that area, there is no intent here to whitewash his actions. His neck was out a mile. In fact, had he followed instructions in STANDARD AIRPORT TRAFFIC CONTROL (Continued on page 48)



AIR FORCE'S new C-119B has longer booms; lower vertical stabilizer, formerly hung below booms, has been eliminated

Operational Engineering

Automatic Aerial Delivery

THE air-supported, air-supplied army of the future, represented today in cadre by the airborne division, will require several thousand cargo and troop aircraft operating in shuttle lines to support initial airhead units, with several hundred planes thereafter needed to maintain supply operations. The critical timing in opening airheads requires speed and precision in the aerial delivery of men, munitions, arms and rations. In addition to the urgent need for weight reduction in air-transportable vehicles and weapons, the speed with which these items can be delivered from the air to the ground within a limited drop area also cuts the number of planes necessary for a shuttle delivery.

Fairchild Engine and Airplane Corp. builds the only U. S. troop and cargo carrier specifically designed to drop men and supplies by parachute—the C-82 *Packet* (manufactured steadily since 1945) and the larger, improved C-119 *Packet* (now in production). These versatile over-200-mph aircraft also operate as conventional troop and cargo transports, ambu-

lance planes, glider tugs, etc. A special version fitted with a track-tread gear can operate from undeveloped strips.

This military freight-plane specialization has led Fairchild Aircraft engineers to design, in cooperation with the Army Field Forces and the Air Materiel Command, several types of aerial dispatching systems, the latest of which will discharge 17,000 pounds of cargo within eight seconds.

The framework for the various types of delivery—the C-82 *Packet* fuselage—is a freighter cargo-hold with a clear height of eight feet, five inches, a clear width throughout of eight feet, and the length at the clear height, 28 feet. The forward end of the hold slopes to six feet, three inches and the full over-all length is 38 feet, six inches. These dimensions give an unobstructed space of 2,916 cubic feet with a flat floor area of 351 square feet. The flooring is made of $\frac{3}{4}$ -inch plywood with a non-skid coating. Eight aluminum alloy extrusion skid strips, spaced 10 inches apart and raised $\frac{3}{8}$ of an inch above the floor level, extend the full length of the

hold. Flush-type cargo tie-down fittings in the floor form a grid pattern of 20 inches square on centers. The floor structure is capable of supporting a uniformly distributed load of 200 lbs per sq ft.

The basic aerial cargo-dispatching system in the *Packet* is an automatic monorail extending along the ceiling at the center line of the hold. It consists of an aluminum extruded beam from which are suspended trolleys which are actuated by an endless, electrically operated cable. Fifteen standard 350-pound Army paracans, cylindrical containers designed to drop supplies by parachute, may be hooked to the trolleys. A removable floor section and electrically operated paratainer doors are in the bottom of the fuselage at the center of the cargo hold. The endless monorail cable carries the paracans to a tripper located directly over the paratainer doors where the cans or other parachute bundles are released. As each falls free, its parachute is automatically opened by a rip cord attached to an anchor line cable running alongside the monorail. The bundles are connected to each other by a webbing tape, forming a "daisy chain" which insures a close pattern when they reach the ground. By means of this system over 5,000 pounds of paratainers leave the plane in only eight seconds. When all have been dropped the floor doors close and the system is ready for re-loading.

The monorail is operated by a push button at the jumpmaster's station. Pressing this button opens the doors, unlocks the paracan system and starts the cable actuating motor. This system may also be controlled from the pilot's overhead panel or, in emergencies, by manual oper-

tion. When paratroopers and cargo are dropped simultaneously, the center paratainer line is protected by low canvas walls which form an alleyway on each side of the fuselage, thus allowing troopers to file back to the trooper drop doors at the rear of the fuselage while equipment is being unloaded through the floor doors.

The C-119 monorail differs from the C-82 in that it runs the length of the fuselage to forward belly doors while on the C-82 it moves both ways to the center. The C-119 hold is also 14 inches wider and the forward 10-foot section has been heightened by two feet to give a longer clear height over the full hold. The monorail operates in essentially the same fashion in the two planes.

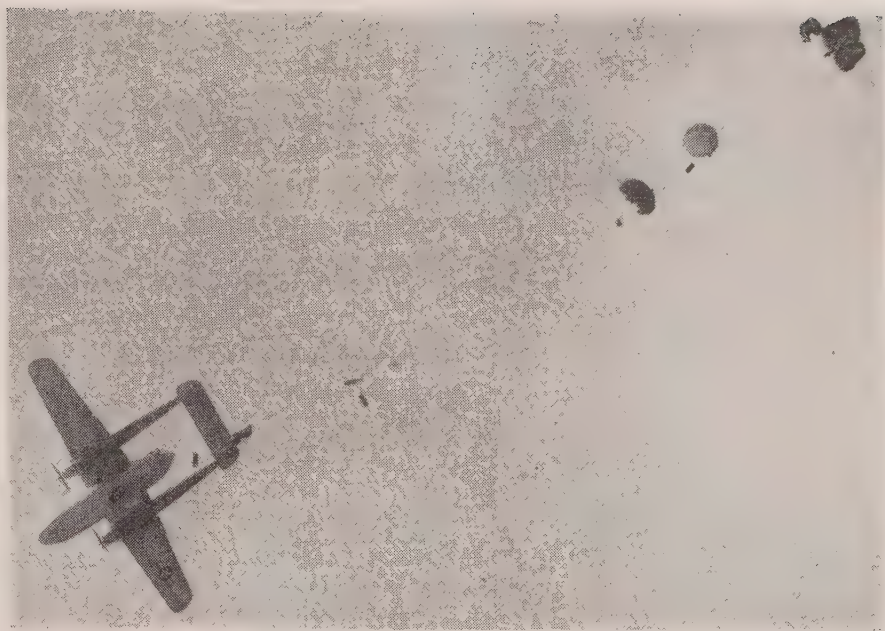
A new endless-belt conveyor system, to be used in conjunction with the monorail to discharge an additional 12,000 pounds of cargo within five seconds, is going through an experimental test program at Wright-Patterson Air Force Base.

This extra system, designed for all-cargo runs, will be fully automatic and electrically operated from the cockpit. Two conveyors, running the full floor length of the hold, one on each side of the central monorail delivery line, will discharge the cargo in flight at the rear of the fuselage. Each conveyor, as used in the Air Materiel Command test program, will be composed of three sections, each two feet wide and one and one-half feet long, supported by rollers. Each section will be individually powered and will have separate quick-release tie-down fittings, all controlled from the pilot's master switch.

In operation, the cargo tie-downs will be released and the conveyor started at the flip of the switch, discharging the 12,000 pounds of paratainers out the rear in five seconds while, taking only three seconds more, an additional 5,000 pounds will move on the monorail to be dropped out the belly doors. The entire conveyor system has been designed to be interchangeable between the C-82 and C-119.

The term "paratainers" may be applied to the special paracans, bundle rolls for unusually shaped items, wood crates and any other cargo containers designed to be dropped by parachute.

Present experimental conveyor drops require the removal of the clamshell loading doors at the rear of the *Packet* fuselage before flight, but design changes may



make it possible to dump supplies without special ground preparations.

Tests in parachuting light and medium Howitzers and Jeeps have resulted in the use of wooden platform delivery bases. In proving the equipment, a 155-mm Howitzer mounted on its wood framework was yanked smoothly out through the rear fuselage over floor rollers. An 18-foot nylon chute, thrown out into the slipstream by a strong spring, hauled the Howitzer through the opening and a static line opened the 90-foot main ribbon chute. The small chute kept the Howitzer level.

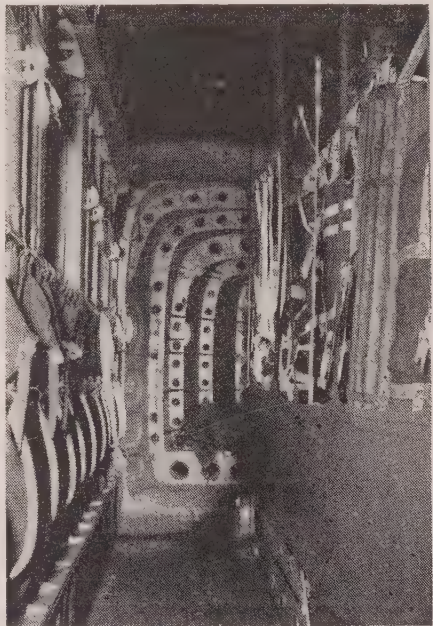
The truck-bed level, square-sided cargo holds of the old and new *Packets* allow ample loading room for practically every type of light and medium mobile equipment used by the Army Field Forces. Continuing test programs and design work by Fairchild and Army and Air Force engineers are aimed at improving and adding to the adaptability of the *Packet* design for every conceivable kind of delivery.

With its several available dispatching methods, the new C-119B coming off the production line can drop loads of over 10 tons, most of it within the first few seconds over the delivery zone, without the need for landing the plane.

J. L.

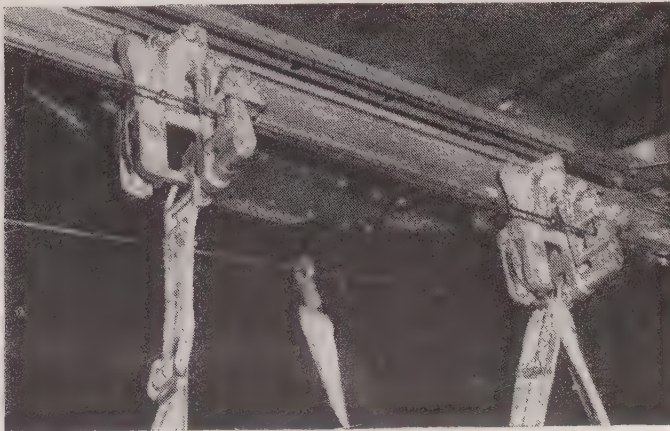
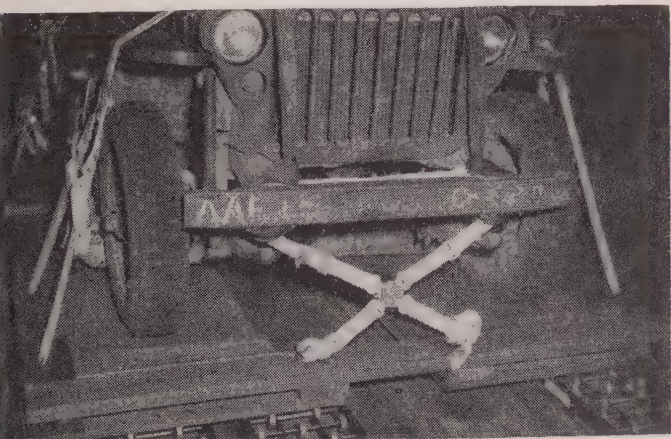
MONORAIL system developed for *Packet* drops all paratainers in eight seconds

AISLE on either side of paratainers leads to trooper drop door in rear



JEOP, Howitzer and such equipment is mounted on wooden platform

MONORAIL cable carries paracans to tripper. Note the anchor line



CAOA REPORT . . .

CORPORATION AIRCRAFT OWNERS ASSOCIATION, INC.

Corporation Aircraft Owners Association is a non-profit organization designed to promote the aviation interests of the member firms, to protect those interests from discriminatory legislation by Federal, State or Municipal agencies, to enable corporation aircraft owners to be represented as a united front in all matters where organized action is necessary to bring about improvements in aircraft equipment and service, and to further the cause of safety and economy of operation. The CAO A headquarters are located at 444 Madison Avenue, New York 22, N. Y.

CAOA Granted New Identification . . .

In a letter of authorization from Mr. Fred B. Lee, Deputy Administrator of the Civil Aeronautics Administration, members of CAO A have been granted a special identification.

This identification to be used as a suffix to the usual radio identification is the word "EXECUTIVE." Used immediately after the "NC" number this will identify the aircraft as a business airplane flown by a corporation pilot. For example: "NC12345 EXECUTIVE calling La Guardia tower!" will at once identify this aircraft as an "executive" aircraft, and do much to facilitate prompt handling in the pattern.

In conjunction with this new "Executive" designation a new decalcomania is being prepared for CAO A recognition once the aircraft has landed. This "decal" is conservative in design and only large enough for recognition by airport personnel servicing the aircraft.

The combination of the new designation for radio contact with CAA and other communication centers and the identification "decal" should do much to speed the servicing and efficient handling of CAO A aircraft.

The Association is beginning the preparation of a Directory of all corporation owned and operated aircraft for distribution by the CAA to their various offices and communication centers.

It will list the corporation aircraft, their equipment, and registration numbers, as well as other pertinent data. It will be cross-indexed for rapid checking and identification of any aircraft listed, by either owner or registration number.

It will contain listings of ALL corporation aircraft whether members of CAO A or not. All data pertaining to aircraft owned and operated by ANY business organization as an aid to its operation would be appreciated by CAO A. Send this data to C. B. Colby, Secretary, Corporation Aircraft Owners Association, 444 Madison Avenue, New York 22, New York.

Note: This Directory data is requested from ALL operators of executive aircraft.

If not a member of CAO A write the Secretary for details of requirements for listing.

NY Port Authority Offers CAO A Aid . . .

James C. Buckley, Director of Aircraft Development for The Port of New York Authority, wrote the Secretary of CAO A to express his interest in "working with your organization to develop at our airports the facilities which will meet the needs of corporation aircraft owners."

The membership of CAO A was promptly circularized for their thoughts on the matter and a meeting was arranged with the Authority for a discussion. Many interesting and helpful letters were received from the membership, several of which were emphatic in their suggestions.

Mr. Buckley's letter was appreciated by the Association, not only for its invitation to sit down with the Authority and talk over the problems of, and requirements for, the more efficient handling of corporation owned and operated aircraft, but for the recognition accorded the Association as the spokesman for such activity.

Aviation agencies, both federal and civilian, are recognizing the importance of the part executive aircraft is playing and will play in the future of aviation. CAO A is assuming an important task in bringing this to the nation's attention.

If Any of Your Employees Fly . . .

It has been recently pointed out to the writer that some folks do not know all that they should about aviation insurance.

As a matter of fact the writer picked up a few pointers himself. For example, it turns out that an employer is responsible for damages from any aircraft owned and operated by an employee (not the employer) IF that aircraft happens to be used on any form of company business. Whether or not the employer knows it is being so used makes no difference in his liability.

It might be wise for employers to check employees to see which of them hold pilot licenses or own aircraft of their own.

We also learned that it is possible to obtain "Non-Ownership Aircraft Liability Insurance" on firms that have a lot of employees who MIGHT use their own aircraft on company business.

New British Radar Equipment . . .

New British aircraft designs are being planned to take a new nose gadget. This latest radar development is known as Cloud and Collision Warning Radar Equipment and is designed primarily to detect cumulo-nimbus clouds of dangerous proportions in the path of the aircraft. It has a range of 40 miles and so gives ample warning for the average transport to turn aside. It also will indicate the presence of other aircraft or high ground in the path of the aircraft so equipped. It was shown recently.

Beware Polarizing Sun Glasses . . .

If you wear polaroid sun glasses write to the Office of Aviation Information, CAA, Washington 25, D. C. for booklet explaining dangers of polarized sun glasses. ➡➡



ONE AND ONLY executive aircraft of its kind. This Fairchild M-84 prototype was designed as a four place personal plane with a Continental 220-hp engine, PT-23 wing, and retracting landing gear. Cruising speed is 140. Now used by officials of Ranger Aircraft Division

USAF Weather Chasers

(Continued from page 18)

reports for accuracy and then disseminates the information to the Armed Forces and the U. S. Weather Bureau over the AACS international weather teletype network. One of the most important recipients of this reconnaissance data is the Joint Weather Bureau-Air Force-Navy Weather Analysis Center, ("WBAN"), Washington, D. C.—the government agency responsible for the daily analysis of weather conditions throughout the United States.

To provide the vitally important weather information for military operations, the Air Force forecaster must have all available weather information constantly at his fingertips to evaluate adequately the atmospheric behavior over the northern hemisphere. To "fill in the blanks" on the weather map with the maximum global weather coverage, the Air Force has established, under command of the Air Weather Service, a far-reaching aerial reconnaissance program operating through five widely dispersed units as follows:

The 308th Reconnaissance Group, VLR, (Weather), based at Fairfield-Suisun Air Force Base, California, has the responsibility for training air crews, and develops and standardizes procedures and techniques to be used in the activities of five reconnaissance squadrons.

The 374th Squadron, located at Fairfield-Suisun Air Force Base, California, flies four reconnaissance tracks in fan-like fashion over the eastern Pacific.

The 375th Squadron, operating flights from Ladd Air Force Base and Elmendorf Air Force Base in Alaska, and Shemya, in the Aleutians, obtains weather data from the northern Pacific and Arctic areas.

The 373rd Squadron, based at Kindley Air Force Base, Bermuda, covers the north and south Atlantic and the hurricane areas in the Caribbean and the Gulf.

The 514th Squadron, based on Guam, operates three "synoptic" flights over the western Pacific and tracks all typhoons in the area from the time they are born until they disintegrate.

The 2078th Air Weather Reconnaissance Squadron (Special), based at Fairfield-Suisun Air Force Base, California, is called upon to perform special projects and training missions anywhere in the world.

Each of these operations encompasses some phase of the reconnaissance program, with methods designed or altered to fit the objective peculiar to the area. Although the technique may differ according to locality, the work of each squadron finds its place in the over-all weather reconnaissance picture. The mission of the five squadrons is outlined, as follows:

The 374th Squadron gathers weather data from over the east Pacific ocean areas adjacent to the western coast of the U. S. The observations are reported, during flight, to one or more AWS stations, from which they are sent over the normal AACS weather networks and made available to other weather agencies. This data is often the only information forecasters have as to weather conditions over the Pacific ocean and, therefore, is of direct benefit to the public through the U. S. Weather Bureau advisories. To a great extent, accurate weather forecasts are vital to the economy of our west coast states: water for irrigation of farm lands is often so scarce that dependable forecasts are necessary to enable its conservation for extreme draught conditions; citrus growers must be forewarned of frosts so that they may take adequate precautions to prevent loss of their valuable produce.

The 375th Reconnaissance Squadron has been assigned two reconnaissance missions: first, to observe weather conditions over the north Pacific from the Aleutians to Japan and second, to maintain weather reconnaissance reporting facilities in the Arctic regions. Because of the lack of ground weather stations, as cited, there is a negligible amount of weather data available north of 70° north latitude—(a very strategic portion of the world). In the light of the experiences of World War II, it is reasonable to assume that this area may, in the future, prove to be the international crossroads of the air and will undoubtedly be "no-man's land" in event of future air warfare. The 375th flies a "Ptarmigan" reconnaissance flight every other day of the year over the north pole providing valuable observations used in weather analyses of the entire Alaskan-Arctic area. There are other indirect values (Continued on page 44)



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TRAIN IN MIAMI -- AIR CAPITAL OF THE WORLD

Pilot's Report ... Swift

(Continued from page 22)

better than you'd expect. By stretching your neck, you can see directly ahead over the prop spinner.

There was no dome speaker in this "125," so we put on the headsets and asked the control tower for taxi instructions.

"Swift five-two-king, proceed to runway one-six-left and call when ready for take-off."

We taxied nearly a mile and parked off the runway to check the mags. While we ran-up the engine, an AT-6 pulled in behind us and asked for take-off clearance.

"Swift five-two-king, are you ready to go?" asked the tower.

We acknowledged, checked once more around the cockpit, then pulled out on the broad paved runway. For this first take-off we eased in the throttle slowly. There was noticeable torque, but generous application of right rudder easily kept the little "125" on the center line. As the airspeed passed 60 mph, the *Swift* came off the ground. We eased off a little on the throttle and reached across under the wheel to snap up the gear. To raise the gear on the *Swift*, one must either change hands on the control column just off the ground or cross under the wheel with his right hand to start the gear up.

We climbed out away from the airport at 85 mph over the forest of oil well derricks at Signal Hill. As we turned out of traffic, the 650-hp AT-6 that had taken

off directly behind us passed by nearly 200 feet below. To out-climb an AT-6, rate of climb on the *Swift* must be close to the 1,000-fpm claimed by the factory. You can be sure that the pilot of the AT-6 was climbing just as fast as his ship would go because no one likes skimming the oil wells off the end of runway 16L. There just isn't any place to land!

The sky was cloudy and a little rough as we climbed up over the harbor at San Pedro. We pulled on full carburetor heat and eased in full throttle to compensate for the loss of power. The Continental never missed a beat.

Flight characteristics of the *Swift* are very similar to those of the Beech *Bonanza*. This ship is very light on the controls and a green pilot must force himself to use his finger tips and toes to keep from over-controlling. Throughout our climb to 6,000 feet, the left rudder pedal was never touched. In a full-power climb there is more than enough torque to make all left turns.

Picking our way around the clouds, we leveled off and throttled back to the recommended 2,350 rpm for cruising. In level flight the nose is very low and visibility is excellent.

First experiment on the list of learning how any new airplane flies is to stall it. We tried all combinations to see if the *Swift* had any unhappy stall characteristics; gear up, gear down, flaps up and flaps down. We tried straight-ahead stalls and stalls out of tight turns. Believe me, the *Swift* gives plenty of warning in all stalls before it quits flying. It shakes and buffets just like a *Cub*, but when it does finally stall, the nose drops rapidly. Actually the one unexpected development in stalling the *Swift* was its surprisingly excellent aileron control. We tried a full stick-back stall and then rocked the ailerons so that a wing dropped over 30 degrees. Then we picked the low wing back up—with aileron alone. The wing-tip slots on the *Swift* work out remarkably well.

It is rather easy to re-stall the *Swift* during a stall recovery by coming back too fast on the wheel. These secondary stalls are similar to those in any airplane with a relatively high wing loading. The *Swift* has only 131.63 square feet of wing for its gross weight of 1,710 pounds. That's a wing loading of almost 13 pounds per square foot. This ease of re-stalling may be one of the reasons that the *Swift* is placarded against spins although other acrobatics are permitted.

After experimenting with all the stalls in the book, we throttled back and headed down. The mile-long Lomita flight strip was nearby so we went in for a couple of practice landings. The *Swift* should be slowed down to 100 mph before the gear is dropped and this takes quite a while following a fast let-down.

We throttled clear back to 1600 rpm on this particular airplane before the red warning light began to flash. There was a noticeable engine roughness between 1700 and 1900 rpms, but the *Swift* smoothed out again as soon as more power was added.

This blinking light on the landing gear is fine—except perhaps when the bulb burns out or there is a short in the wiring. No matter what you use—a Rube Goldberg

boxing glove that beats the pilot over the head when he forgets to lower his landing gear, a loud horn or fire a 21-gun salute, there are going to be belly landings as long as there are retractable gears. Personally, I'd like a horn wired into the blinker light circuit on my *Swift*. With the blinker-light set-up on the *Swift*, the red light means "gear up," the amber light means "gear in motion," and the green light indicates "gear down."

We dropped the gear and flew a wide right-hand pattern into the Lomita ex-Navy strip. A change in trim-tab setting eliminates back-pressure in slow flight. The trim tab on the *Swift* is just below the roof behind the seats.

The airspeed indicator read 90 mph on the base leg and we slowed up to 80 on the final approach. Once lined up with the runway, we dropped the flaps and came across the boundary of the field at 75 mph. A tractor with a ridiculously small red flag hanging from the cab was grading the approach to the strip and we had to add a little power to keep a safe space between him and the landing gear.

On our practice landings at Lomita, there was a moderate cross wind and we had to come in left-wing low. With a 75-mph speed, there isn't much float left in a *Swift* with flaps down. As the wheel comes all the way back the nose raises high enough to partially obstruct forward visibility.

It is easy for the novice in the "125" to come back too fast on the controls and balloon. We had to remember to continue using a fingertip touch on the wheel, even though we were making a landing.

Once on the ground, the *Swift's* 9-foot, 9-inch landing gear keeps it rolling straight ahead. We braked to a stop and taxied back up the side of the runway. With this high wing loading, the *Swift* is one of the easiest planes to handle on the ground in a high wind.

"If you must stop in a hurry, you can ground loop these ships without getting a wing down," said Mr. Hite. "I had a student get panicky and hit one brake just as we touched the ground. We were still doing 50 mph when we started around. We did three circles so fast that it made me dizzy, but didn't scratch a wingtip even though we blew out a tire."

Our taxi speed was between 10 and 15 mph and there were no other ships in the pattern so we asked if it was OK to lock one brake and see what happened. Mr. Hite nodded and 'round we went. The wings remained absolutely level as we made one rapid "360" and stopped.

"Want to see the short-field performance?" asked Mr. Hite as we re-checked the mags before another circuit of the field.

We nodded, climbed off the controls and Mr. Hite started down the runway. As the airspeed climbed between 40 and 50, he snapped down the flap lever and pulled back on the wheel. The *Swift* literally hopped into the air and our check-out pilot pulled up the gear.

"You can get this ship out of some tiny fields that way," he explained. "On short landings, come in with full flaps and then jerk them out from under you the minute you're across the edge of the field. That kills your float and you can climb on the brakes as soon as you're on the ground."

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We circled the field and came in for a short approach. The man on the tractor was apparently synchronizing his swaths with our circuits of the field for we had to pull up over him again. As we neared the black-topped strip, Mr. Hite pulled up the flaps and we dropped tail-wheel first on the very end of the flight strip. Since there were no brakes on the right side, stopping this roll-out was a two-pilot job.

Minor changes in the canopy and turn-over structure had been made by Temco after our 3852-K had left the factory, so we headed for the pint-sized Torrence Municipal Airport to compare this "125" with dealer Cliff Bantel's latest model. We turned off 1100 feet down the 2400-foot strip—even after coming across the fence about 10 mph too fast.

Except for much needed soundproofing, the only changes have been just aft of the seats. The latest model has a "turret top" while the earlier model had plexiglas covering back of the hatch. A flat ledge replaces the curved shelf on the older model and the turn-over structure has been covered up on the latest planes.

Mr. Bantel advised that he uses his *Swift* on an advanced training program and checks out his commercial students with 5 hours dual instruction at the end of 85 hours of flight training. He requires 2 hours of dual for check-out in the *Swift* if students have 200 hours in the air but have never before flown ships with retractable gear and flaps. Solo time is from 10 to 14 hours with brand new students in the *Swift* at Mr. Bantel's field.

While on the ground at Torrence we had our fuel tanks topped. Depending on where a pilot flies, the 27-gallon gas capacity of the *Swift* may or may not be sufficient. The factory claims a range of 425 miles without an auxiliary tank. With a cruising speed approaching 140 mph, that's three hours in the air.

From Torrence we continued our airport hopping through worsening weather. We climbed up around the busy traffic pattern at the Los Angeles Municipal Airport, flew over Hollywood and headed for the Lockheed Air Terminal at Burbank.

Here we tried a no-flap landing. While a manual crank-down is installed between the seats to crank down the landing gear in case of a power failure, there is no way to lower the flaps should the battery go dead. Both gears and flaps are driven by a small electric motor attached to a hydraulic pump.

We set the *Swift* in on its wheels without flaps, touching down at about 70 mph. The ship rolled out straight ahead as we came forward slowly on the controls to keep the nose down during the roll-out. Tail-high roll-outs are much faster than conventional taxiing, and the runways at Burbank measure 300 by 6000 feet so there was plenty of room in which to get stopped.

On our take-off from Burbank, we got the nod from the tower, lined up on the runway and opened the throttle quickly. Once in the air, we climbed out over the adjoining Valhalla Cemetery, crossed over the outdoor "back lot" at Columbia Stu-

dios and headed eastward the Monrovia Airport.

All our previous take-offs and landings had been on paved airports, so we wanted to try the *Swift* on the downhill, gravel runway at the Monrovia field. We climbed to 2,000 feet and headed off over the Lockheed plant and Glendale.

We clocked the ground speed of the *Swift* in a no-wind condition over the 5.2-mile route of the Rose Parade in Pasadena. Time for the route was 2 minutes and 10 seconds: 143 mph, and we were throttled back to 2300 rpm while letting down at 200 feet per minute.

At Monrovia we came in a little "hot" and pasted the *Swift* down on its wheels to slow it up. We came back on the wheel just a little to keep the tail low and rode the brakes up to the point where they would skid on the graveled runway. We turned back up the 2,550-foot field with plenty of room to spare. There is a 9-inch propeller clearance when the *Swift* is landed in a level-flight attitude.

After a cup of coffee and a piece of pie, we climbed back into the *Swift* and headed for Long Beach. The sun was almost down as we took off and rain showers spotted the landscape.

After two hours in the air with the little *Swift*, we looked at this frisky two-placer with new respect. If you're in a hurry and that extra 20 mph is important, the *Swift* is just what the doctor ordered. In fact this little *Swift* is just what any pilot would order—a fast, sturdy and easy-to-fly cross-country plane.



T. B. LYONS, President
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Dr. T. B. Lyons, President and Treasurer, has had wide experience in school administration and aviation. He was for many years connected with the Pittsburgh Board of Education, and was General Manager of the Graham Aviation Co. which operated a Primary Training School for the U. S. Army Air Forces at Souther Field, Ga. Dr. Lyons is a graduate of Lock Haven State Teachers College and the University of Pittsburgh and is listed in WHO'S WHO in American Education. He assumed his duties at P. I. A. Dec. 1, 1944.

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...and 81st Congress

(Continued from page 15)

continues. You need look back less than a year to find a good example of the techniques currently being employed by the "keep down the Air Force" boys.

The 80th Congress, intent upon carrying out the desires of the American people for a strong Air Force-in-being, was told that to build up the Air Force without building up the other services according to the same yardstick would wreak havoc within the military establishment and jeopardize our national security. The cry was for "balanced forces." The many pages of Congressional hearings on this "balanced force" idea can be boiled down to a very few words—"If you give the Air Force a dollar, you must give the other services a dollar, too. If you don't, everything will get out of balance." This old anti-Air Power concept which was first kicked around back in 1933 was resurrected as a "final hour" means to prevent the Air Force from getting its requisite share of the national defense appropriations.

It was a case of beating the bushes in the valley so that nobody would find the body hidden on the mountain! Is the peacetime interbalance of the military establishment at all important? Should not our concern be with the balancing of our military services against the over-all requirements of modern military operations and against the mission each service will be called upon to perform in the event of a future war? Should we not appropriate funds to each service commensurate with the conclusions reached?

We know that future military operations

will be dependent largely upon Air Power. The United States Strategic Bomb Surveys, the reports of the President's Air Policy Commission and our own Congressional Aviation Policy Board have established this fact with well-documented authority. Their reports were based upon months of painstaking study during which they questioned the highest officials, studied secret intelligence data, and inspected industries, installations, and facilities. Their conclusions reported a unanimous vote for supremacy in Air Power.

Does it not seem logical in the light of these circumstances that the major part of our defense budget should be spent to build up and to maintain a superior Air Force in a constant state of readiness. Surely, if modern circumstances demonstrated that victory in a further war would depend primarily on an early conflict between ground forces, it would be most advisable to expand our peacetime Army. The same reasoning would apply with equal emphasis to the Naval forces. What fundamental reason, therefore, can be advanced—not to expand the one service that is most necessary to the National Defense? It is positively absurd to contemplate the proposed division of our limited defense appropriations into equal shares for all services. They should be apportioned only in such manner as will provide the greatest possible security to our country—and at the lowest cost to the nation's taxpayers.

Although in the 80th Congress we took the first steps in this direction, much remains to be accomplished.

The National Security Act of 1947 which established the Air Force as a separate military service was the first important legislative action in the campaign for Air Power. The increased appropriations voted

by the second session of that Congress was another move toward this goal. However, one major legislative requirement has not yet been met. That is the actual authorization of the long-range 70-group Air Force program.

A bill blue-printing the structure of the long-range plan upon which the Air Force can build was introduced during the last days of the second session of the 80th Congress. This bill, known as the Air Force Act, was passed almost unanimously by the House of Representatives, but time ran out and it did not receive final consideration by the Senate.

The Air Force Act as it passed the House specifically defined and authorized the composition of our peacetime Air Force. It provided for 70 regular Air Force groups and 22 specialized squadrons, backed by 27 Air National Guard groups, 34 Reserve groups, and the necessary auxiliary elements. It authorized a personnel strength of 70,500 officers, and 426,000 enlisted airmen. It further provided authority for an in-being strength of 24,000 servicable aircraft, or 225,000 airframe tons of serviceable aircraft, whichever is more appropriate; and for the research and development for a long-range procurement program of 5,200 planes a year. (At present, basic authority exists for an Air Force of only 46,000 personnel and 6,000 aircraft. The current strength of the Air Force is based on the wartime emergency powers of the President which may be rescinded at any time.)

One of the most important features of the Air Force Act is that it makes appropriations available on a five-year basis. At the present time there is a statutory limitation of one year for obligation and two additional years for expenditure of funds. In the interest of national economy—the statutory limitation of one year for obligation and two additional years for expenditure of funds should be amended with respect to funds for the procurement of aircraft. Authority to obligate funds on a long-range basis is not only in keeping with sound business principles but is demanded by the ever-increasing complexity of air equipment which requires long-range planning and pre-commitment of development and production programs. Our Air Force is largely dependent for the development and production of its materiel upon civilian science and industry who long ago have faced the requirement of long-range planning and long-range program. Such a change in authorization would not alone make the Air Force able to secure lower manufacturing costs but would insure a more stable aircraft industry.

The Congress, as you may know, normally provides the authority for a program and then by an enabling act provides the funds for its implementation. Our Air Force, however, is presently in the position of getting its yearly appropriation as evidence of Congressional intent but without having received the basic authority for the program on which the funds are being expended. The Air Force Act, "Must Legislation Number One" of the 81st Congress, would record the intent of Congress by authorizing an Air Force program consistent with its peacetime mission to pro-



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vide for the air security of the United States. It would set forth by law the responsibility of the Air Force to Congress and to the American people.

There are several other specific problems to be solved by Congress for the Air Force, two of which I think are of utmost importance. They are concerned with providing sufficient barracks and quarters for Air Force personnel and the modernization of Air Force airfields and facilities.

We all recognize the Air Force to be a highly technical service and—that skilled technical personnel are vital to its efficient operation and performance. While the Air Force has never experienced difficulty getting people to enlist and to train for its specialized jobs, it is now beginning to find it increasingly difficult to keep them in the service. The fact that skilled technicians, trained at great expense, are now leaving the Air Force is due primarily to the lack of much needed quarters.

Government quarters are now available to only about 25 per cent of the Air Force personnel who, under the law, are entitled to such facilities. Off-the-base housing has been proven to be no answer to this problem. In cases where civilian communities are located near to Air Force stations, the majority of personnel cannot obtain suitable quarters simply because they cannot afford them. Then, of course, there are many Air Force bases that are either relatively or absolutely isolated. This situation has forced many Air Force people to break up their homes for months and even years, often with no assurance that some day they might be able to resume normal family life should they remain in the Air Force. It is natural that reliable individuals feel a responsibility for the welfare of their families. Even with considerate treatment and good pay you cannot expect a man to stay with an Air Force job under such conditions, especially when the skill and ability he possesses are in demand in civilian life. The appropriation of adequate funds for a full-scale Air Force quarters program is a job that must be done by the 81st Congress.

The 81st Congress must also consider appropriation funds for construction and modernization of airfields and other operating facilities. A large number of Air Force bases, many of them the homes of our best bombardment and fighter squadrons, are virtually falling apart. Most Air Force facilities are of World War II vintage, emergency construction put up under a policy of absolute simplicity and designed to last but a few years. There are only a very few permanent Air Force establishments comparable to those of the Army and the Navy.

World War II facilities are not merely in need of repair—they are no longer adequate! New construction is vitally needed! Yet sufficient funds have not been made available even for repairs.

Air Power is Peace Power! The 70-Group Air Force Program is mandatory legislation for the 81st Congress if we are to create the Air Force that will guarantee our national security in the air and provide the most powerful argument for continuing world peace. This is the Air Age and we must invest our limited appropriations for defense most heavily in air security.



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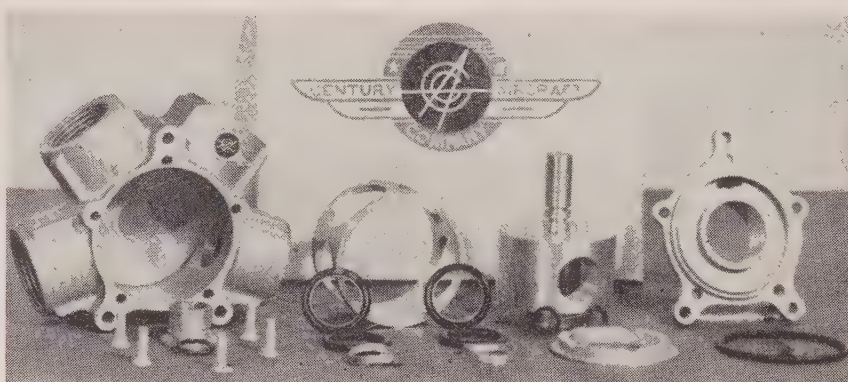
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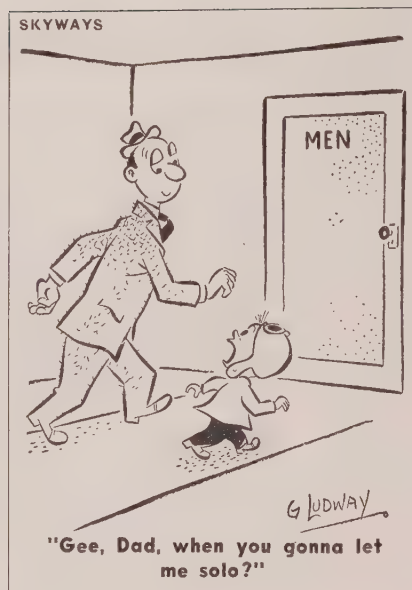
USAF Weather Chasers

(Continued from page 39)

of weather reconnaissance in Arctic regions. Important information is afforded to physicists and meteorologists seeking a successful means for long-range forecasting and weather control. Lacking definite information, meteorologists may only theorize as to the atmosphere's circulation processes in northern latitudes. Polar weather reconnaissance serves to test these theories and advances data to promulgate new and more factual knowledge. Weather reconnaissance over the Arctic regions also affords a valuable insight into flying conditions encountered over relatively unexplored air routes. It has provided helpful data as to the presence of propeller icing hazards and the tenacity of wing ice formations from which Air Force aeronautical engineers are now busy perfecting thermal, chemical and mechanical means for eliminating icing hazards prevalent in the Arctic. Since all such data is obtained during actual flight, it is particularly important to the planning of long-range air operations.

The 373rd Squadron is assigned two reconnaissance missions: first, to provide daily weather data from the North Atlantic to be used in forecasting weather conditions affecting the North Atlantic coastline and air operations to and from Europe, and second, to seek out and track one of the most hazardous of all weather phenomena, the tropical hurricane, in its Caribbean and Central Atlantic ocean breeding grounds. Beginning this year, "fixed" tracks have been discontinued in the Caribbean hurricane area. Instead, flights are made only as storms and threatened disturbances are suspected or occur. Although hurricanes generally follow fairly definite paths, depending upon the month of the year and the point of origin, there are always enough renegades to make any forecaster extremely wary of their behaviour. A few years ago a storm was traced carefully out of the Caribbean to a point off the Florida coast where, it seemed, the hurricane did not further threaten the country. It suddenly reappeared, however, with devastating results, on an unsuspecting New England coast after having apparently moved northward for several days at a rate of 30 to 40 mph. The storm continued northward, finally dissipating in Canada. It is extremely difficult to analyze the current position, to determine the intensity and extent of, and to forecast the future movement of a tropical hurricane, because most of its existence is spent over ocean area where data is either limited or completely absent. Further difficulty in forecasting is experienced because of the relatively small area covered by these tropical storms. Unless the storm center is situated within 50 to 100 miles of a number of weather observation stations, an accurate forecasting of its movements and intensity is almost impossible. Under these circumstances reconnaissance by aircraft over suspected storm areas has proven to be the most valuable and, in many instances, the only source of data for a reasonably accurate forecast.

Flying crews of the 514th Squadron, while participating in daily missions to



gather weather data from over the western Pacific, are constantly on the alert for tropical storms indigenous to that area, known as "typhoons." From the information which the planes radio back to the Weather and Typhoon-Track Centers at Guam, ships at sea and aircraft in flight know which way to turn to safety. Fortunately, the typhoon, born at sea, frequently dies at sea. Often the crews of these typhoon chasing RB-29's are the only witnesses to the birth and death of storms at sea that were of such potential scope and violence that had they swept over land areas, death and ruin would certainly have been left in their paths. The typhoon which struck the 3rd Fleet off northern Luzon in December 1944 did not appear to carry unusual force. After it had twisted on its way, however, three destroyers had capsized, carrying 719 officers and men to their death, 28 other ships were seriously crippled and 156 aircraft had been smashed to bits aboard the plunging carriers. Such a disaster grew out of the fact that no one knew where the storm track lay. This typhoon blew out of a 300-mile stretch of sea from which land based forecasters had no information. The present weather reconnaissance program makes available information from all typhoon breeding areas. Thus, it hopes to prevent such disasters in the future.

The 2078th Air Weather Reconnaissance Squadron (Special) is assigned two primary missions—the training of air crew replacements in weather reconnaissance techniques for all reconnaissance squadrons, and the performance of special projects required in support of other meteorological agencies, including the aerial phases of the research and development program of geophysical sciences for which Air Weather Service is responsible. The Squadron aircraft and crews are presently assigned flight responsibilities for such research projects as measurement of solar radiation from clouds and earth, measurement of electrical current distribution in and around thunderstorms, determination of the effects of certain atmospheric pressure conditions on altimeter readings, magnetic measurement in the Arctic, and many similar projects.

In conducting a survey to determine the value placed on weather reconnaissance reports by forecasters, Air Weather Service requested comments from Navy Aerology, U. S. Weather Bureau and Air Weather Service stations. The survey indicated conclusively that aircraft weather reconnaissance is extremely important to forecasting—and that the present demand for such a service far exceeds the present capabilities of the reconnaissance units to perform this function.

The amount of valuable weather data obtained by Air Weather Service reconnaissance, particularly over remote areas, will be augmented considerably by the adoption of new sounding equipment recently perfected by the Signal Corps. The radiosonde, a weather reporting instrument that has long been used in balloon ascensions from ground installations, has been redesigned and equipped with a parachute for "drop" release from aircraft in flight. The instrument, known technically as Radiosonde AN/AMT-3, is commonly referred to as the "Dropsonde" in Air Force operations. It performs the same purpose as its progenitor, the Radiosonde, in transmitting to the radio operator of the aircraft radio signals indicating the temperature pressure and humidity of the atmosphere through which it descends. Its essential value lies in the fact that it permits weather observers to explore areas of the atmosphere out of reach of ground installations. Moreover, the instrument will provide basic weather data at various levels from launching altitude down to the earth's surface. Normally, certain aerial reconnaissance observations such as temperature, pressure and humidity are limited to the altitude of flight; the "dropsonde," therefore, is expected to prove a decided adjunct in broadening the range of observations. "Dropsondes" have been distributed to the 308th Reconnaissance Group for operational testing and establishment of standard operating procedures.

Considerable advancement has been made in the Air Force weather reconnaissance program since it was initiated. The area of coverage has been steadily extended and the accuracy and amounts of weather data obtained have been greatly increased. The data requirements of weather forecasters are changing steadily with the application of a finer knowledge of the upper atmosphere. While important improvements in techniques are being made, the science of weather is still relatively unexplored. In seeking a fuller understanding of weather phenomena, the national weather services are experimenting with a variety of factors: the reconnaissance aircraft are equipped to provide data for the study of atmospheric refraction; the rate of icing of aircraft; the mechanism of typhoon formation and dissipation. Certain reconnaissance aircraft carry instruments used for studying the sun's radiation; they measure long and short wave variations, sun spot data and sky brightness.

Aerial weather reconnaissance has well-proven its vital role in the global weather forecasting system of the Air Weather Service. The stature of the future aerial reconnaissance program promises to grow with the ever-expanding weather requirements of the U. S. Air Force.

Skyway to Berlin

(Continued from page 28)

and weather officers make their reports, and pilots get a flight plan showing course headings for each leg of the flight based on the latest winds aloft reports. Also recorded are the estimated times of arrival (ETA's) at each point along the route. In a few minutes briefing is over and the crews head for the line.

We are assigned to the first plane in the block and as the second hand of our watch sweeps toward 1200 hours we taxi up to the end of the runway as the rest of the 70-plane group jockeys into position on the taxi strips.

There's no end-of-the-runway waiting for air traffic control clearance. The AACs operator in the control tower gives take-off instructions and passes along a clearance and altitude assignment from AACs Air Traffic Control in almost the same breath. Our plane, for example, is assigned to fly the corridor at 5,000 feet. The Number 2 plane is assigned 6,000 feet, Number 3 gets 7,000 feet. The next three planes are given 5,500, 6,500, and 7,500 with the system being repeated to put every sixth plane at the same altitude until the entire block is airborne.

With planes clearing at three-minute intervals the tower and traffic control men have little time for extra-curricular conversation. Our guide tells us that Frankfurt Airways prior to the beginning of the airlift handled about 6,000 voice contacts a

month. Contacts now are averaging close to 24,000. "Although voice contacts have increased four-fold," he explains, "there is now eight times as much traffic in the area. We've kept the air-ground traffic down by using short, simplified procedures. If we hadn't done that the radio channels would be hopelessly fouled up most of the time."

A '54 headed east from Templehof is always identified by the call sign "Big Easy" plus the last three digits of the plane's serial number. On the return flight west the call sign is changed to "Big Willie." When the C47's were flying, too, they were tabbed "Little Easy" and "Little Willie" although the latter soon became "Wee Willie" to most pilots.

Frankfurt Airways receiving a call from "Big Easy Two Zero Two" who reports "over Aschaffenberg 5000 at 48" knows immediately that the caller is a C-54 headed for Berlin on the airlift. They know his airspeed and his ETA over Fulda, the next check point. The traffic controllers can tell at a glance whether or not he's still in the spot originally assigned to him. This is possible because all pilots fly a standard pattern to Berlin and return. There is no such thing as changing altitude to duck a husky patch of cumulus. Altitude and airspeed are held as close as possible to those assigned. And to airlift pilots flying the electronic skyway to Berlin "close" means "on the head," not within 100 feet on the altimeter or 5 mph on the airspeed indicator.

Although the ceiling and visibility on this particular flight is unlimited, all pilots

in our block are making simulated instrument approaches and landings at Berlin. When we are about 100 miles out the captain tells us that our plane is already under observation and our approach is being monitored by a surveillance radar operator. In a few minutes this operator is directing our pilot on to the final approach where a precision scope operator takes over and brings us in. At the same time the surveillance operator has switched over to the plane directly behind us, putting him on final approach as we touch down.

"We're using a new GCA technique here now," the captain informs us, "which permits us to land planes at less than three-minute intervals with the ceiling as low as 500 feet and a visibility of one mile. Under the old set-up we had to bring them in at about five or six minute intervals."

This new technique, developed after extensive AACs experiments at Andrews Air Force Base in Maryland, combines two electronic aids—precision GCA radar and flight traffic control surveillance radar. The system got its tactical baptism in Germany.

It operates like this. A plane on final approach is controlled and brought in to land by GCA precision equipment while surveillance radar is used to direct a second plane, approximately five miles behind the first, into position for final approach. When the first aircraft has touched down GCA takes over control of the second and surveillance shifts to the next incoming plane. Working together, the two operators keep a steady stream of aircraft ap-

(Continued on page 65)

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Photo Eyes of the U.S.A.F.

(Continued from page 31)

developments have given a somewhat erroneous impression of what can be done now. The publicity surrounding Air Force and Navy experiments with rocket projectiles which have automatically recorded earth scenes from miles in the air and the continuing experiments with Stratovision, the projection of television from an airplane, have misled the public to a certain extent. The rocket photographs have scientific applications now and may have military uses in the planning of master mosaics for strategic use in the future, but the recovery of rocket cameras is thus far practical only in friendly territory. As far as Stratovision is concerned, it has given rise to the possibility of a magic-eye plane flying high over enemy territory while the earth scene below is received on screens at headquarters, allowing the tactical experts on the ground to correlate the informative pictures as they are screened.

Camera experts concede that a television camera may become necessary equipment in a reconnaissance plane if development can reach the required efficiency level, but nothing already developed or scientifically predicted can approximate the accuracy and pin-point definition of a scene recorded on chemically-treated plates or film. The scanning eye is too easily fooled in the quick glance. Thus photography appears permanently assured of its place in reconnaissance planes.

Even robot controls may not eliminate entirely the need for pilots to fly the photo recon jobs. While the human brain may be duplicated to some extent by electronic flight controls, pilots will fight to the last switch on the point that no mechanical contrivance can ever duplicate completely the efficiency of an alert, intelligent, adaptable recon pilot. Anyway, until science can prove indisputably that aviation technology has reached the stage where the pilot is merely a chairborne ground control man, the photo reconnaissance groups of the Air Force are those least likely to worry about pilot unemployment.

The progress and perfection of photo reconnaissance is vital to the security of any country. In all its ramifications it provides all-seeing eyes for the defense, strategic and tactical commands of the military services. No general, no matter whether his equipment is the most modern, liaison the finest, troops the best equipped, position the firmest, can long feel secure unless he knows as exactly as possible how his enemy is preparing, moving, constructing defenses and placing his troops and supplies.

Expert photo reconnaissance, on many counts, might be considered one of the most vital members of the integrated team in the success or failure of any combat tactical maneuver. Photo reconnaissance must search out and record every square foot of territory, from all angles and altitudes, and then must be prepared to record continually the same scenes to show each change on the earth's face. Photo planes have to fly as high above or as near to the ground as necessary, range as far as tactics demand and always, in the face of monumental obstacles, return home

with as perfect a record as possible. The photo plane is the one type which must return to its base to complete a mission.

The success or failure of reconnaissance may affect not only the lives of thousands of troops and civilians, but in the long run determine the rise or fall of nations in combat. It is possible that the foregoing sounds too strong, but it must be remembered that all bombing, artillery fire, ground movement in strange territory and master strategic planning in any form, depend largely on the evidence collected from the sky. Where that may be lacking, reliance on unverified charts may lead to losses in men and equipment, blind thrusts by combat teams and waste bomb drops on false targets. The photo records do not supply all the answers—expert camouflage and underground installations can fool the cameras—but they provide basic material for charts of the combat intelligence technicians.

The standard equipment that the Air Forces uses to perform the important task is continually changing—according to aviation and photographic developments, with materiel in current use ranging from the almost obsolete to the advanced—with a greater spread in aircraft rather than cameras. The "almost obsolete" aircraft category includes reciprocating engine fighters of the late war still in use, like the RF-51 photo *Mustang*; "standard" photo aircraft include jet fighters and converted reciprocating engine bombers; while "advanced" equipment would cover specialized aircraft, some existing only as single units (Republic XR-12) or jets still on the secret list, and cameras such as a high-speed tactical camera being developed by the Fairchild Camera and Instrument Corp.

The most important stage in the machine flux is the standard, since it includes the planes and cameras in widest use and ready for greatest tactical service. The progressive chronological history of a typical Air Force photo reconnaissance group shows more clearly than any bare exposition of equipment, the past, present and possible future of military reconnaissance. It also provides a look at one main type of Air Force photo operations.

The 363rd Reconnaissance Group, a Tactical Air Command unit, is presently stationed at Langley Air Force Base, Virginia. Its history began on the West Coast during the Spring of 1943 when the 363rd Fighter Group was activated in California. By late in that year it was operating out of England with long-range P-51's as a fighter group over the ETO, doing escort and fighter-bomber work. After D-Day operations over Normandy, it was moved to Cherbourg and continued its missions until August, 1944, when the Ninth Army moved in and the 363rd was given one week to convert to a Tactical Reconnaissance Group. Utilizing two squadrons of P-51's and one squadron of P-38's, the 363rd, newly commanded by Col. James M. Smelley, furnished dawn-to-dusk reconnaissance coverage of the entire Ninth Army front and at times provided supplementary photo coverage for the Seventh and Third Armies.

During 1946, Col. Smelley was senior air officer of a U. S. military mission in Colombia and then on November 4, 1947, he reported to Langley to take command of a newly re-activated group—the 363rd

Tactical Reconnaissance—and thus uniquely he commands the same group he led in combat, possibly the only Air Force officer holding the distinction. But the setup has changed quite a bit since Europe.

The 160th and 161st Tactical Reconnaissance Squadrons (JP) of the group are equipped with 18 Lockheed RF-80's each, with 22 jet pilots assigned to each squadron, while the 162nd Tactical Reconnaissance Squadron (NP) has 18 Douglas RB-26 *Invader* photo planes, 22 pilots and 36 radar observers who are also navigator-bombardier jacks-of-all-trades. The "Checker-board" group is now a round-the-clock reconnaissance unit.

The RF-80's operate at all altitudes, depending on the type of mission and the cameras installed. For dicing runs, utilizing a single camera pointing forward through a nose window, the planes fly at 50 to 100 feet altitude.

The confines of a single-engine photo plane allow little space for camera installations, especially since the first line jobs have always been designed primarily as fast fighters, later converted to photo use. North American's RF-51 *Mustang* makes the case. During the war, oblique cameras were mounted directly behind the pilot in whatever room was available. Later, and this goes for the postwar version still used by some groups, the camera position was switched to the rear of the fuselage, just above the belly air scoop outlet. Because of the plane's slimness and the tight quarters only one camera can be used at a time, depending on the mission; either a 12-inch K-22 in the oblique position shooting out of a window on the left side of the fuselage or a 12-inch K-22 mounted in the same place but pointed down through another window for vertical runs.

The debut of jet speeds made it urgent that a jet photo plane be developed and for once aviation technology fell in with tactical requirements. That big unobstructed nose gun bay on the F-80 made it a comparatively simple proposition for the cameramen to find alternate photo positions. The efficiency contrast between the RF-51 and the RF-80 should be clear when one realizes that the *Mustang* carries only one camera in either of two positions while the *Shooting Star* may carry four, with six position choices.

Here's the line-up of camera equipment used in the RF-80's of the 363rd. The circular nose window marks the position of a standard K-22 for dicing runs, usually fitted with a 12-inch cone and lens. (Except for one case the cone measurement is also the lens measurement since they come in matched sets for alternate use on the standard camera bodies which have focal plane shutters and two nine-inch square film frames.) The f/5 lens for the dicing job covers an angle of view of 56 degrees starting 14 degrees below the horizon. Further aft, the bottom of the camera bay has three windows for vertical camera positions. The cameras may be K-22's with a six-inch or 12-inch cone, but the bay also takes a K-22 with a 40-inch cone and 26-inch lens (the exception mentioned) in conjunction with other cameras if necessary. Each side of the camera bay has a window for oblique positions, one side for shooting at a 15-degree angle and the other at 30, in both cases the K-22's. With

this choice of camera positions it is possible for the RF-80 to mount three six-inch K-22's for tri-metrogon views; one vertical, one 15-degree oblique and the other a 30-degree oblique; while a fourth camera, the 40-inch, fills the aft camera position. The workhorse K-22 is displaced only on low-altitude, high-speed runs by a K-17 with faster shutter speeds.

The pilot controls the camera shutters with trigger switches in the cockpit. Each camera has an intervalometer which may be set for any time interval according to the ground coverage and the job at hand and the fact that it takes two and one-half seconds for the motor-driven camera to make a complete cycle between shutter trips while the roll film is moved up to a new position. To inform the pilot of misfires, when the cameras are armed (a true gun circuit is used) a green light flashes in the cockpit and this light blinks when the trigger and shutter is actuated for each camera. For dicing runs and emergencies an alternate manual control is provided. The RF-80 is a fast plane, but even so its full speed is rarely utilized, dicing runs usually being made at 275 to 300 mph without the speed control brakes, while high-altitude trips are made at cruising.

The bigger night photo plane, the RB-26, actually uses less photo paraphernalia, but its job calls for a more complex, precise operation. This 350-mph, medium-altitude recon plane carries a pilot and two navigators, one of whom is a radar operator, while both are trained as bombardiers to use the Norden bombsight.

Night photo reconnaissance, the primary mission of the black, 13-ton *Invaders*, is carried out at 10,000 feet, utilizing a single camera set in the rear fuselage, tripped automatically by a photo electric cell which is actuated by the light of a flare bomb. A forward camera position is no longer used. For daylight work, the secondary mission, two coupled cameras are operated in the same rear fuselage bay at altitudes of 10,000 to 12,000 feet.

The single night camera is a K-19 with an f/2.5, 12-inch lens, and a 72-degree angle of view. The 3,000,000 candlepower flash bomb is pre-set to light at one-half or one-third of the plane's working altitude, the latter being preferred for best results. With a 24.7 fuse setting, the flare goes off at 3,300 feet and the photo-electric cell trips the camera's shutter.

For the day work the RB-26's mount two K-17B cameras with f/5, 12-inch lenses set at six degrees off vertical, pointing across each other's line of sight in a cross oblique. They may be tripped by judgment or bombsight, but the mechanical fix, used by night or day, insures the accuracy necessary for mosaic matching.

The 363rd does all its own film processing and some of its own print work, usually turning out roughs to give a quick look at the photo results. Large scale work goes to the 4th Photo Tech Squadron (TAC), also a Langley unit, while all mosaic work is done by a mapping section.

The entire resources of the 363rd TAC Recon and auxiliary outfits are utilized during peacetime in simulated operations under the direction of the 9th Air Force. Mosaic mapping is performed over strategic U. S. cities and industrial areas while

(Continued on page 65)

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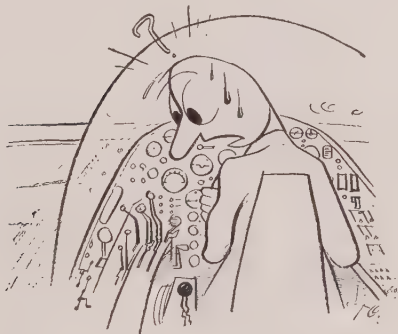
Dilbert

(Continued from page 35)

PROCEDURES, there would have been no accident.

This procedure requires a pilot to receive taxi instructions from the tower *before* leaving the line. Had he done this, he would have had his radio checked and, at the same time, received warning of the stalled plane.

The Mechanical Age—Thirty miles from home Dilbert's propeller went into high pitch. He attempted both automatic and manual control, but with no success. He was still able to maintain altitude, however, so he headed for the barn. He made it over the field okay, then proceeded to prove that a flight is never over until the airplane is back in the hangar.

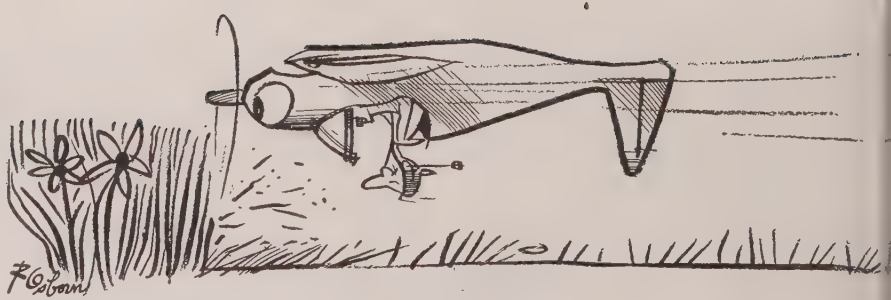


The tower gave him a red light on his landing approach because the plane ahead was slow in clearing the runway. Dilbert applied full throttle and started to go around again. With wheels and flaps down, however, he could not maintain altitude and mushed into a grove of trees adjoining the field.

Dilbert had failed to notify the tower of his emergency. Not having done this, he should have made certain there would be no interference with his landing approach. This mistake led to the next which involved his wheels and flaps. These should not have been lowered, particularly the flaps, until he was definitely committed to a landing. Of course, he should have raised them as soon as he started to circle the field again. In the first place, the symptoms of this propeller trouble indicate it may have been due to an open circuit breaker, which point Dilbert never checked.

A lot of money is spent on safety equipment so you can cope with emergencies of this sort. It is all wasted, however, unless you understand the mechanics of these safeguards. You have got to visualize your emergencies ahead of time and *know* the right answers. Unless you do, your reactions and split-second decisions will too often be wrong.

A Look at the Record—The Civil Aeronautics Board has just released another yearly aircraft accident report. There is one bit of very heartening news in it. The over-all accident rate—the number of accidents per each 10,000 hours flown—is considerably lower than it was the year



"The grim reaper"

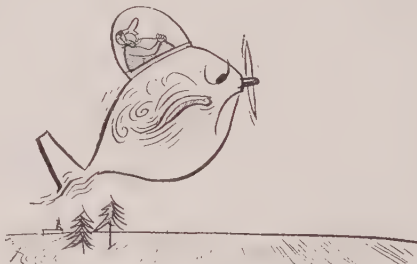
before. Praise be to Allah and pilots!

So far, so good, but don't cheer too loudly, for the rest of the report still is rimmed in black. Here are two items covering non-commercial flying which continue to be unacceptable, not only because the accidents are so entirely unnecessary, but also because of an aroused public opinion.

1. One or more violations of the Civil Air Regulations were present in 40 per cent of all fatal accidents.

2. The most dangerous violation is buzzing, such as diving or flying low over people, buildings or congested areas, or stunting while low. This sort of thing accounted for 26 per cent of all fatal accidents.

I won't irritate you by emphasizing the fact that pilot error continues to be the primary cause of the great majority of accidents. You should be vitally interested, however, in two categories; together they accounted for 89 per cent of all fatal accidents. They are *stalls* and *collisions*, 49 per cent and 40 per cent, respectively. Knowing this, even Dilbert might be expected to take particular pains to avoid these two hazards.



"Low an' Slow"

Are You Collision Conscious?—Do you circle the field unless cleared in by the control tower?

Do you try to predetermine which way to circle the field before you arrive? Some fields require right turns, others change under certain wind conditions.

Do you use a reasonable circling radius, or a wide one which lends uncertainty as to your landing intentions? Remember that a large airplane must necessarily fly a larger radius than a small one.

Do you make a sharp turn before your final approach? In a high-winged ship, this blankets your vision of the airport and of other aircraft. Rules require a straight course of at least 1,000 feet before crossing the airport boundary.

Do you waste unnecessary time getting

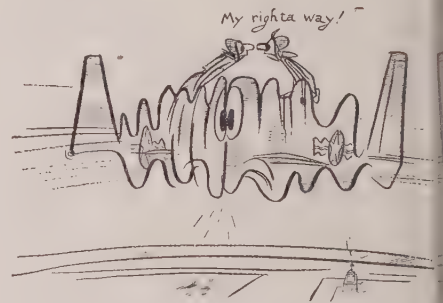
down at a crowded airport?

Do you delay traffic by squatting on the end of the runway while others are waiting for you to take off?

Do you expect the other fellow to be more alert than you, or do you rely on your own vigilance to avert a collision in the air?

Do you practice the courtesy of the air which requires you to give way to larger, less maneuverable aircraft?

Do you!



Or Else—Then there's the one about the military flying field at which a list of names was posted on the bulletin board with these terse instructions:

"The following men will pick up their Good Conduct Medals at the personnel office this afternoon. Failure to comply will result in disciplinary action!"

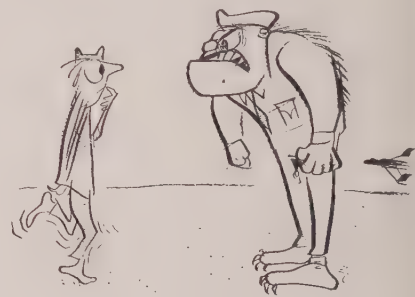


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Planes of the USAF

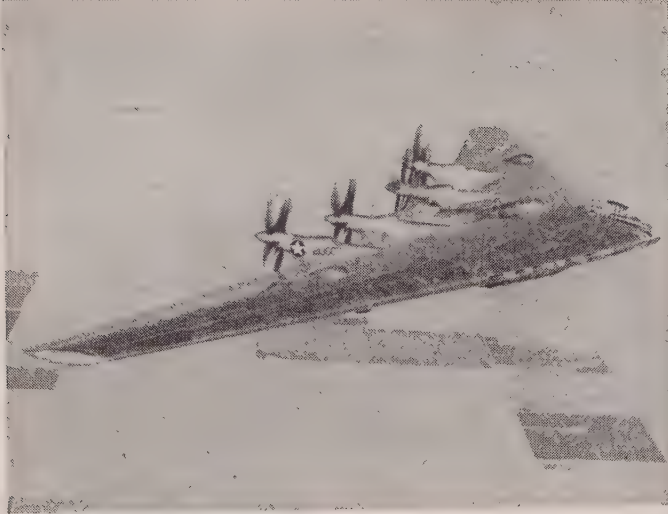


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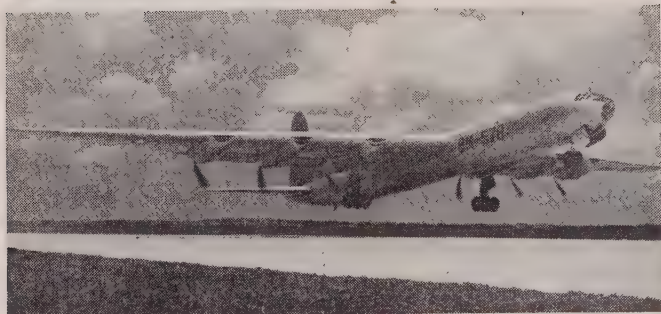
Hoyt B. Vandenberg

Chief of Staff, USAF

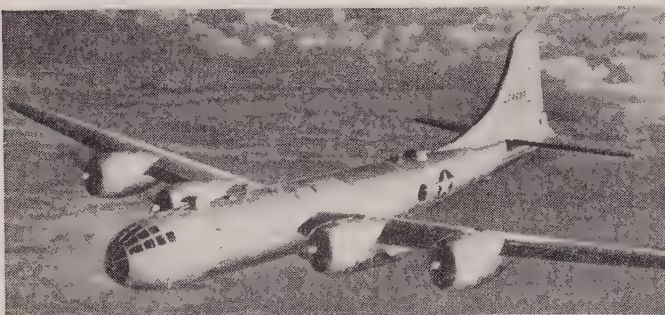
BOMBERS



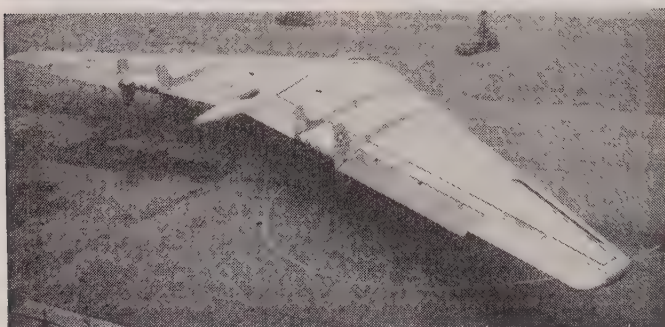
NORTHROP B-35 In the Heavy Bomber class the USAF has the *Flying Wing*, powered by four Pratt and Whitney 3,000-hp pusher engines. Feature of this design is the elevons which perform the functions of the elevators of a conventionally designed airplane. The B-35 has a top speed listed as "over 350 mph," a range of over 3,000 miles and a bomb capacity of 52,000 pounds. Many of the B-35's are being converted to jet power and will be redesignated RB-35.



CONSOLIDATED B-36 Another Heavy is the B-36 which is said to carry 10,000 pounds for 10,000 miles, or maximum load of 72,000 pounds for a reduced range. Powered by six Pratt and Whitney 3,000-hp engines, the B-36 has a speed of over 300 mph. Its wing span is 230 feet and it is 163 feet long. Its height in taxi position is 47 feet. It is equipped with two pressurized compartments for crew. Fuel capacity is 21,116 gallons.



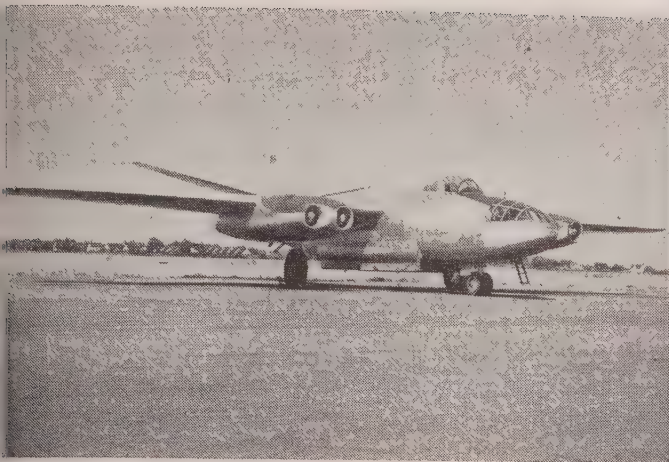
BOEING B-29 Standby in the Medium Bomber class is the B-29 *Superfortress*. Until something better comes along in quantity to replace it, the B-29 will be doing active Air Force duty. Powered by four Pratt and Whitney engines of 2,200-hp, the B-29 has a speed of over 350 mph, a service ceiling of 38,600 feet and a range of over 2,000 miles with full load of 10 tons of bombs. The *Superfortress* carries crew of 12.



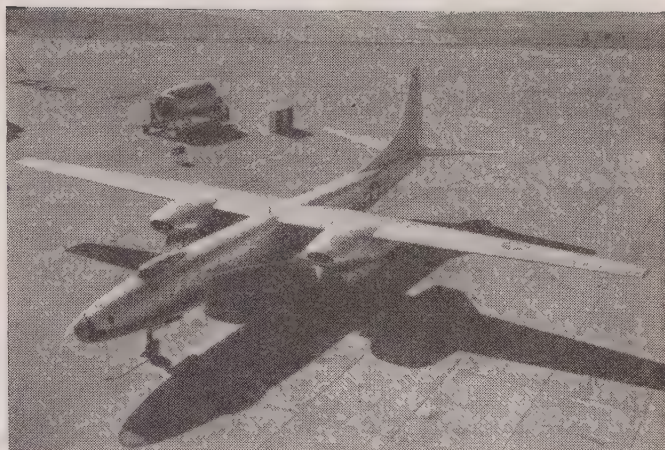
NORTHROP RB-49 Another *Flying Wing*, but this one in the Medium Bomber class, is the all-jet RB-49. Powered by eight J-35 jet engines, the RB-49 is rated in the 500 mph class, and it is expected to be operated at altitudes in excess of 30,000 feet. Carrying a bomb load of 15 tons, the RB-49 has a range of 1,500 miles. This bomber uses elevons and jaw-like flaps for rudder effect. New budget forced cancellation of 30 RB-49's.



BOEING B-50 Newest in the *Superfortress* class is the B-50 Medium Bomber, eventual successor to the B-29. Powered by four Pratt and Whitney engines of 3,000-hp each, the B-50 has a top speed of 400 mph, a cruising speed of 300 mph and a range of 2,850 miles. It carries a maximum bomb load of 10 tons. The vertical tail of the B-50 is hinged to permit its folding horizontally on to the right stabilizer so that the big bomber can be housed in existing hangars. The ship carries a crew of from 10 to 14 men.



NORTH AMERICAN B-45 In the Light Bomber category is the Air Force's jet B-45. Powered by four General Electric J-47 jet units (these replaced the J-35's that powered the XB-45), the B-45 is rated in the "over 500-mph class." It has a service ceiling of 40,000 feet. With a maximum bomb load of 10 tons, the ship's range is reported to be "more than 800 miles." It carries a crew of four in pressurized cabin, with the pilot and copilot sitting in tandem under canopy. Jet units are arranged in pairs in single nacelles.



CONSOLIDATED B-46 Also in the Light class is the jet B-46. Powered by four TG-180 jet units, the '46 is another one rated in the "500-mph class." It has a service ceiling of 40,000 feet and, carrying its top bomb load of 10 tons, has a range of "over 800 miles at cruising." It carries a crew of three in pressurized compartment in forward portion of fuselage ahead of the wings. Pilot and copilot sit in tandem beneath bubble-type canopy. On a recent flight, the B-46 maintained an average ground speed of over 553 mph.

BOEING B-47 The *Stratojet* with its swept-back wings, six J-35 turbojet engines and 18 Jato jet-assist rockets is undoubtedly one of the Air Force's fastest Light bombers. Rated in the "over 600-mph class," the B-47 is capable of carrying over 10 tons of bombs a distance of 800 miles at cruising speed. The jet units are arranged four in pairs in two nacelles supported on forwardly inclined struts under inner wing, and two in single nacelles under outer wing tips. The 18 Jato units give 18,000 pounds additional thrust.

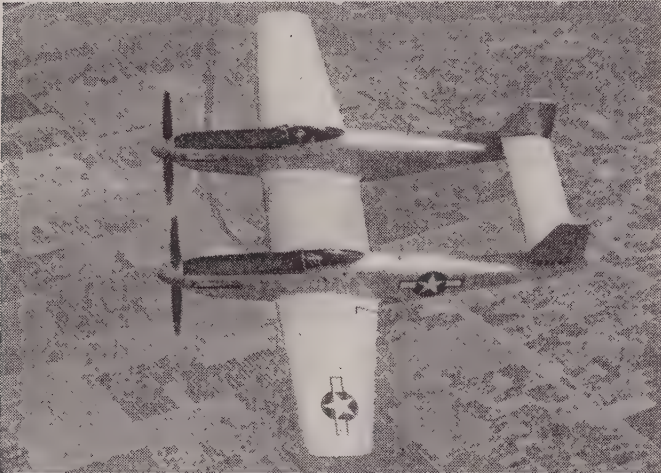
MARTIN XB-48 Listed in the Light Bomber class, the XB-48 was one of the first six-jet bombers to fly. Powered by six General Electric-Allison J-35 jet units, the '48 has a speed in the vicinity of 500-mph, a service ceiling of 40,000 feet and a range of over 800 miles with a full bomb load of over 10 tons. The ship's six jet engines provide 24,000 pounds of thrust on take-off. It carries a crew of three. Feature of the ship is its tandem-type landing gear with small stabilizing wheels that swing down from wings.



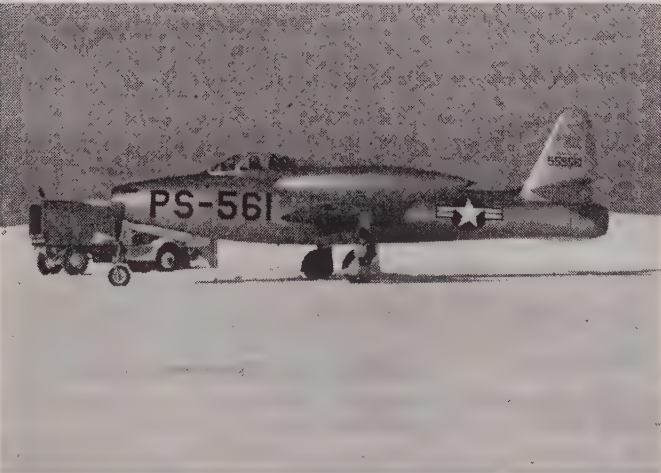
FIGHTERS



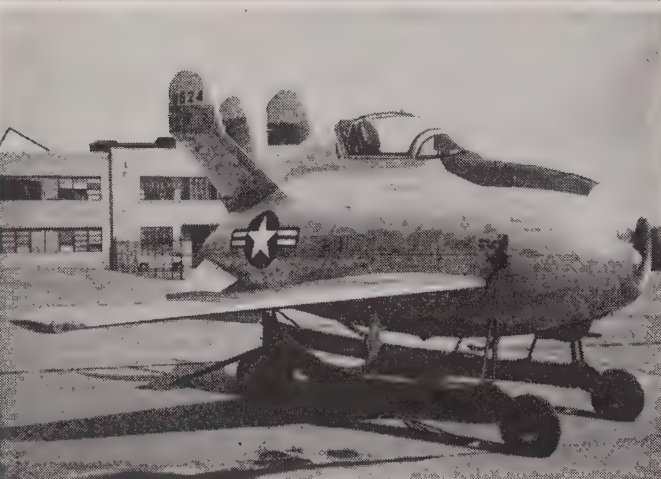
LOCKHEED F-80 One of the first of the USAF's jet fighter planes and still one of the best, the improved F-80, designated F-80C, is now in the "600-mph class." Powered by an Allison-built J-35 jet engine, with water injection, the F-80 now has a higher rate of climb than its predecessor. It has a range of over 500 miles and a ceiling of 45,000 feet. Firepower also has been increased. New radar-equipped version, carrying a pilot and radarman, will be designated F-94.



NORTH AMERICAN F-82 Called the *Twin Mustang*, the F-82 is virtually two *Mustangs* (F-51's) joined together. A long-range, two-place escort fighter, the F-82 is powered by two Allison (reciprocating) engines which give it a speed of more than 475-mph and a range of more than 1,000 miles. The *Twin-Mustang* is armed with machine guns and carries 7,200 pounds of bombs or one 2,000-pound torpedo. In night-fighter version, radar operator rides the co-pilot (starboard) position. Flight controls are fitted in both cockpits, with starboard ones removeable. Cockpits are heated, carry oxygen.

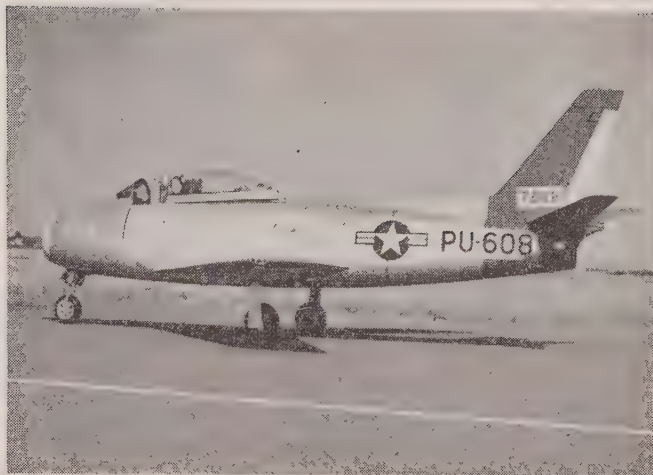


REPUBLIC F-84 Logical successor to the *Thunderbolt* is Republic's jet F-84. Powered by Allison-built J-35 jet engine, the *Thunderjet* has a speed of more than 600-mph, a service ceiling of 40,000 feet and a range of about 700 miles. One feature of the '84 is its quick engine change. The fuselage is constructed to permit "splitting" which makes possible an engine change in just 50 minutes. In addition to mounting six 50-cal guns, *Thunderjet* carries rockets in racks under wing. Cockpit is pressurized, has pilot-ejector seat, electrically operated jettisonable canopy.



MCDONNELL XF-85 One of the most unusual looking fighters on the Air Force roster is the stubby Parasite XF-85. Carried aloft in the bomb bay of a mother ship, the giant B-36, this interceptor fighter is released from its harness to fly under its own power from a Westinghouse J-34 jet engine. When its work has been completed, the pilot maneuvers the plane back into the harness slung under the mother plane, and it is returned to base again. The XF-85 has no landing gear. Newer version may have more tail fins.

NORTH AMERICAN F-86 Reported to have a speed in excess of 600-mph, the F-86 is another fighter powered by the J-47 jet engine (late version of F-86 is said to carry J-47 unit). Both wings and tail of the '86 are sweptback. Its service ceiling is given as 40,000 feet and its range as "500-mile radius." Fuel capacity is 435 gallons, plus another 165 gallons in auxiliary wing tanks. Armament consists of six 50-cal guns. The ship employs a tricycle gear. New AF budget may cancel plans for F-93 (formerly F-86C).



CURTISS-WRIGHT XF-87 Designed to be an all-weather fighter for the USAF, the XF-87 *Blackhawk* was originally a four-jet radar-laden ship. Later model, however, is powered by two higher powered jet engines which give the ship a speed in the "600-mph class," and a range of 600 miles. The first version (pictured) had its four jet engines mounted in pairs in single nacelles. The jets are Westinghouse J-34's. While production plans for this ship have been shelved, experimentation is still going on with it. The ship carries a crew of two, pilot and a radar operator.

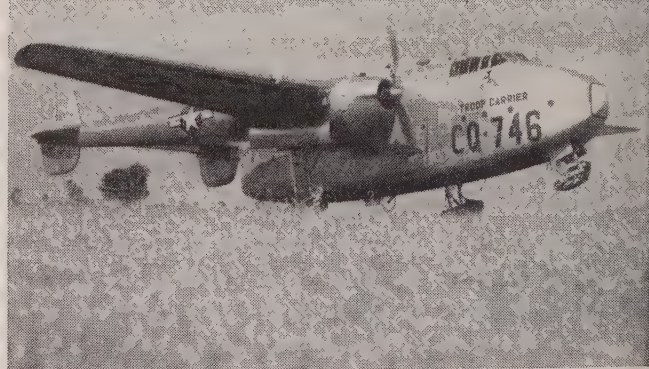


McDONNELL XF-88 Still undergoing flight tests at Muroc is the twin-jet fighter XF-88, designed as a "penetration" fighter capable of operating deep within enemy territory as either a fighter-bomber or bomber-escort ship. The '88 has a sweptback wing and tail, and a design gross weight of about 15,000 pounds. It is powered by two Westinghouse 24C axial-flow gas turbines mounted side-by-side in the belly of the fuselage. The pilot sits in a pressurized cockpit located forward of the leading edge of the wing. The cockpit is equipped with a pilot-ejector seat. No performance figures are available at present time.



NORTHROP XF-89 Another all-weather fighter is the jet XF-89 which is presently undergoing tests at the USAF test base at Muroc. Feature of this ship is its x-ray "eyes" that enable it to penetrate darkness, fog and storms in carrying out its mission. The XF-89 is powered by two General Electric J-35 jet engines, carries a crew of two, pilot and radar operator, and is heavier although slightly smaller than the World War II *Black Widow*. Cockpit is equipped with ejection seats. Plane has remotely controlled turrets.





TRANSPORTS

DOUGLAS C-74 Called the *Globemaster* (above), the USAF's C-74 is a four-engine transport with a maximum range of 7,800 miles. Powered by four Pratt and Whitney 3,000-hp engines, the *Globemaster* has a cruising speed of 300 mph, a service ceiling of 22,000 feet. It is capable of carrying 125 troops or 109 litters and five attendants. The '74 carries crew of 13.

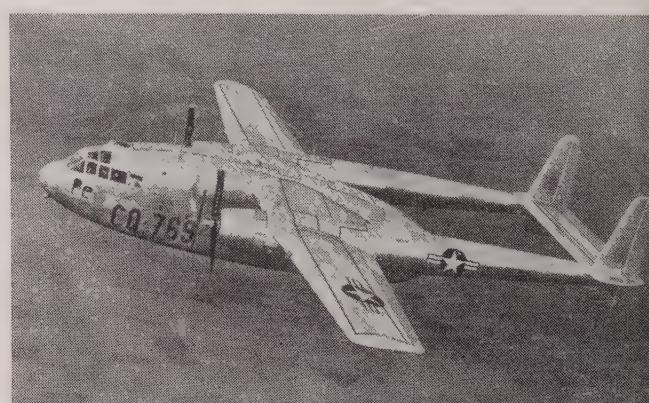
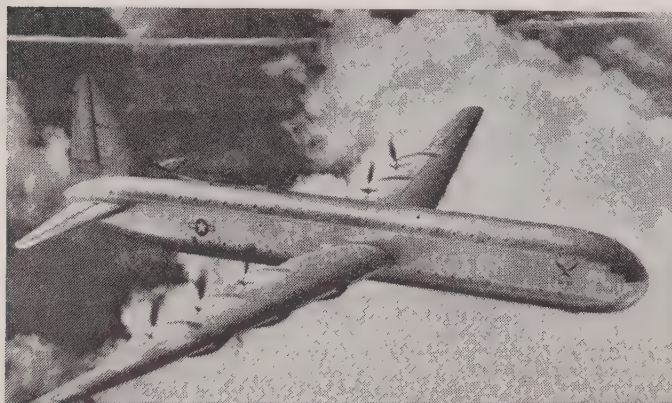
BOEING C-97 The *Stratofreighter* is a four-engine medium- to long-range, high altitude and high-speed cargo plane. It is powered by four 3,000-hp Pratt and Whitney engines which give it a cruising speed of more than 300 mph and an operating range of some 4,200 miles. Feature of the ship is its double-deck arrangement. It is capable of hauling 41,000 pounds maximum payload in its 6,140 cubic feet of space. It carries a five-man crew. The C-97B is troop carrier plane.

CONSOLIDATED C-99 The Convair C-99 is one of the largest of the Air Force's cargo or troop transports. Powered by six 3,000-hp Pratt and Whitney engines mounted in pusher positions on the trailing edge of the big ship's wing, the long-range '99 has a rated speed of "over 300 mph" and a range of 8,100 miles. This transport can accommodate a maximum of 400 fully armed troops, 100,000 pounds of cargo or 300 stretcher cases, attendants. Also a two-decker, C-99 has a fuel capacity of 21,116 gallons, has crew of five.

FAIRCHILD C-82 The *Packet* (above) long has been known as the AF's "Flying Boxcar." It is powered by two 2,000-hp Pratt and Whitney engines which give it a top speed of 250 mph and a range of more than 1,100 miles with a full cargo of nine tons. It has been used mainly as a paratroop transport and as such carries 48 paratroopers plus their equipment. Several '82's are being tested with tractor gear for rough or wet-field operations behind the lines. The C-82 has a ceiling of 21,200 feet, landing speed of 95 mph.

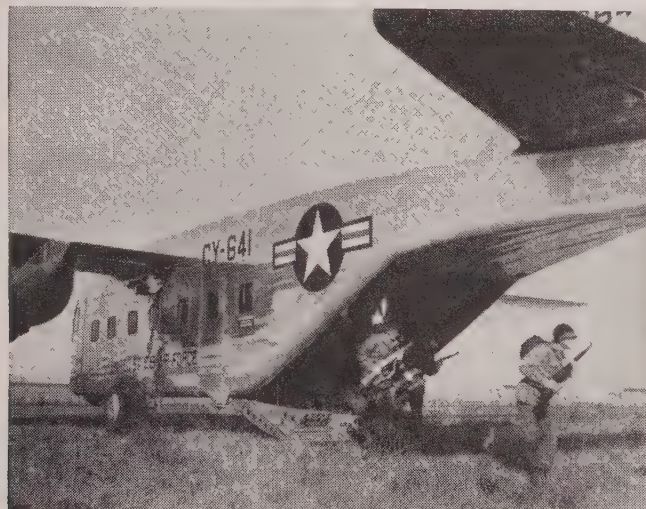


FAIRCHILD C-119 Latest version of the C-82 is this C-119. It is powered by two 3,000-hp Pratt and Whitney engines which give it greater speed and higher payload than its predecessor, the C-82. It has a cargo capacity of over 10 tons; will carry either 36 litters, 42 troops or 20 chute supply cans. The C-119 has re-designed nose offering better visibility. It carries three-man crew, has fuel capacity of 2,700 gallons. The C-119B has new tail . . . the twin fins and rudder don't extend below the tail booms as on 119A.

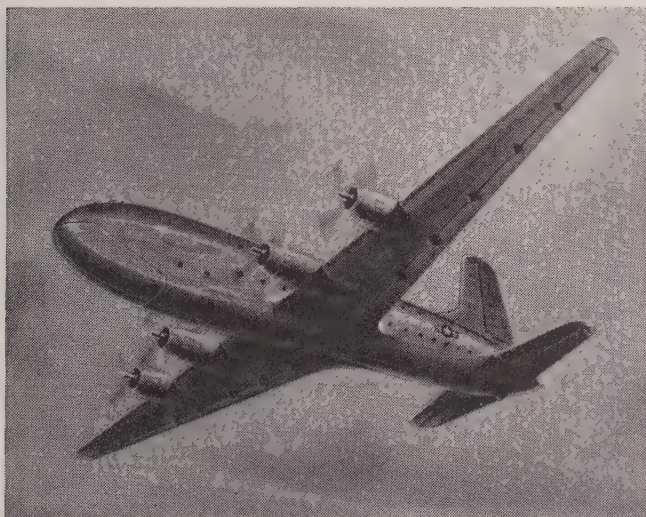




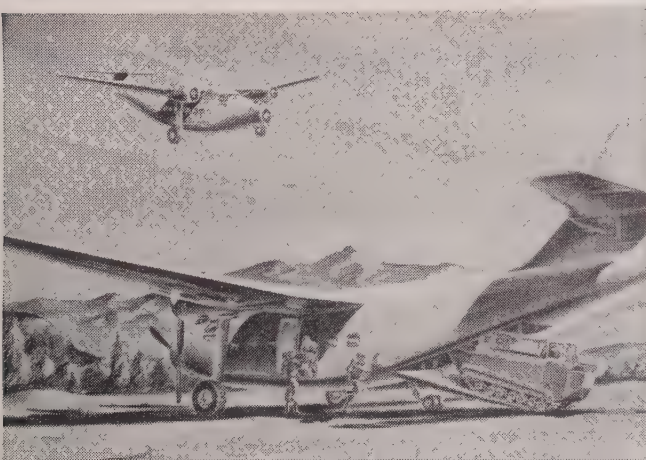
LOCKHEED C-121 The Air Force's version of the well-known civil transport, the *Constellation*, is this C-121 cargo or troop transport. This ship is not in production for the USAF at this time, but many are in use. Powered by four 2,000-hp Wright engines, the C-121 has a top speed of 350 mph and a maximum range of 5,500 miles. In addition to carrying 49,000 pounds of cargo in its interior (as a freight plane), a so-called "Speedpak" that is carried under the belly of the ship hauls another four tons. Another version of the C-121 is the executive version VC-121B.



CHASE XC-122 This is a powered version of the all-metal troop and cargo-carrying glider known as *Avitruk*. Looking like a short, squat flying boxcar, the XC-122 is for the primary use of delivering airborne soldiers behind the enemy lines or at various assault points. It is powered by two 1,500-hp Wright engines which give it a cruising speed of about 190 mph. It has a service ceiling of 23,000 feet and a range of 850 miles. It has a wing span of 86 feet 3 inches and is 53 feet 4 inches long. Access to the fuselage is via an opening under rear fuselage. Another version, XC-123, is larger, carries more men, equipment, is powered by two Pratt and Whitneys.



DOUGLAS C-124 This ship is an extensively modified version of the C-74 *Globemaster*. It is powered by four 3,500-hp Pratt and Whitney engines and has a range of 2,400 miles carrying a payload of 50,000 pounds. The C-124 differs from the C-74 in that it has more powerful engines, strengthened wings and landing gear, a built-in nose loading ramp, a re-designed flight deck and several other interior modifications. Converted to a two-decker plane, it will carry 222 troops and equipment or, as hospital ship, 123 litter patients plus 45 ambulatory cases and 15 nurses. It carries a crew of six. All C-74's are being modified, re-designated C-124.



NORTHROP C-125 Called the *Raider*, this is an assault transport version of the civilian *Pioneer*. Powered by three 1,200-hp engines, this ship is capable of taking off in only 500 feet. Employing reversible-thrust props shortens the *Raider's* landing run to 350 feet. A huge door, large enough to admit vehicles up to nine feet wide and six feet high, is contained in the tail of the *Raider*. A rescue version is designated C-125B.

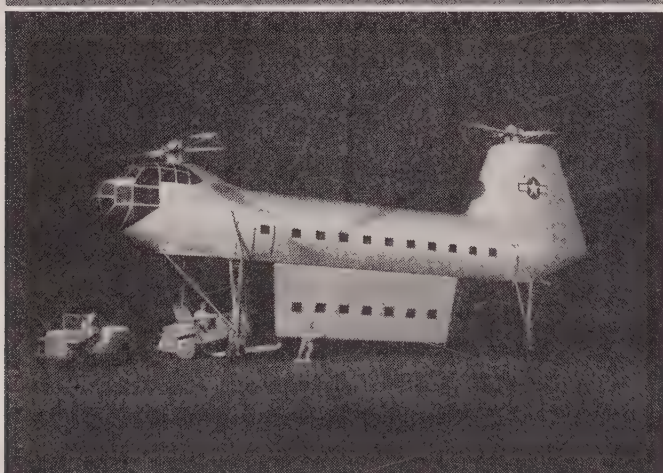
HELICOPTERS



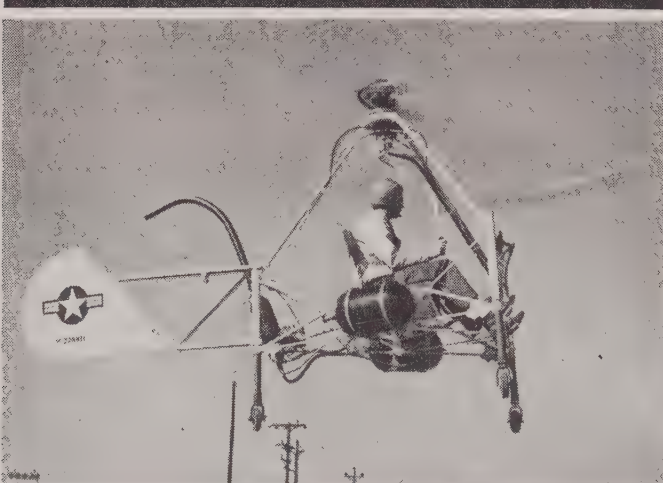
BELL YH-12 Designed and built for the USAF as a general utility helicopter, the YH-12 is a five-place 'copter that has a top speed of 105 mph and an operating speed of 90 mph. Its range is 300 miles and it can climb vertically at a rate of 450 feet per minute. Its service ceiling is 13,000 feet and its hovering ceiling is listed as 4,350 feet. One version is capable of carrying two litter. Another model is the YH-15.



SIKORSKY H-5F This is the military version of the commercial S-51. Seating a pilot and three passengers, the H-5F is powered by 450-hp Pratt and Whitney engine which gives it a top speed of 103 mph at sea level, 100 mph at 5,000 feet. It has a service ceiling of 14,000 feet and a range of 260 miles. The cabin of the H-5F is both heated and air conditioned. Baggage compartment is located aft of the engine compartment. The engine is mounted horizontally in fuselage center section. Winterized version is the H-5G.



PIASECKI XH-16 This is the largest helicopter ever built, and it is destined for use by the USAF. Its configuration is similar to the Navy's HRP-1. Designated the XH-16, this huge transport helicopter follows the tandem configuration pioneered by Piasecki. The fuselage of the XH-16 compares in general shape and dimensions to the body of the familiar C-54. Feature of this 'copter is the large detachable capsule which doubles its payload. The utility XH-16 is supposed to be capable of carrying 25 fully armed troops, or about 5,000 pounds of cargo.



MCDONNELL J-1 Referred to as "the world's first ram-jet helicopter," the J-1 carries its power at the tip of its rotors. These blade-tip jets are fed fuel from tanks mounted on either side of pilot. A combustion heater located aft of the pilot preheats the fuel before it is fed up the line to the jets. With power applied directly to the blade no rotor transmission or gearing is necessary. The two ram-jet engines weigh about 10 pounds each, and provide "Little Henry," nickname for the ram-jet 'copter, with a top speed of 50 mph. The J-1 is strictly experimental.

LIAISON PLANES

CONSOLIDATED L-13 One of the USAF's folding wing liaison planes is this L-13. Powered by 245-hp Franklin engine, it has cruising speed of 92 mph, takes off in only 230 feet and lands in 227 feet. Ship is to be used for observation.



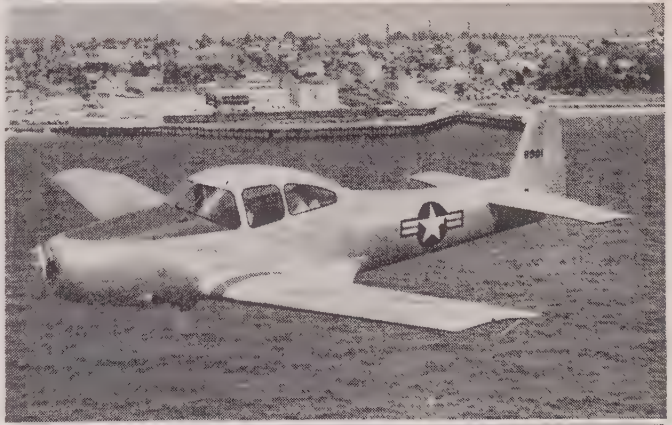
BOEING L-15 Called the *Scout*, the Boeing L-15 is another liaison plane of many and varied uses. Powered by 130-hp Lycoming engine, the *Scout* has a cruising speed of 100 mph, a service ceiling of 12,000 feet and a combat radius of 110 miles. It carries two men and its uses are similar to those of the L-13 and L-16. The *Scout* was purchased by the Air Forces for the use of the Ground Forces. It can be fitted with skis or floats for winter or water military operations.



AERONCA L-16 This liaison plane also has been purchased by the Air Forces for the Army. It is powered by an 85-hp Continental engine and has a top speed of 95 mph. It has a service ceiling of 10,000 feet and a combat radius listed as 65 miles. It carries two men, and has a gross weight of 1,220 pounds. The ship has a wing span of 35 feet 2 inches, and is 21 feet 6 inches long. The cabin has a transparent roof and jettisonable doors. Engine has fuel injection.



RYAN L-17 This is the military version of the popular civilian *Navion*. Powered by 185-hp Continental engine, the L-17 has a top speed of 157 mph and a cruising speed of 150 mph at 70 per cent of power. Its normal range is 500 miles. For increased range, the USAF uses an auxiliary fuel tank which is carried in the baggage compartment. The ship carries a pilot and three passengers, and is to be used mainly for liaison and observation work by the Army.



CESSNA 195 Very recently the USAF ordered military versions of this civilian Cessna 195 for use by Ground Forces. Powered by 300-hp Jacobs engine, it has top speed of 180 mph, cruises at 165 and it has range of 700 miles.

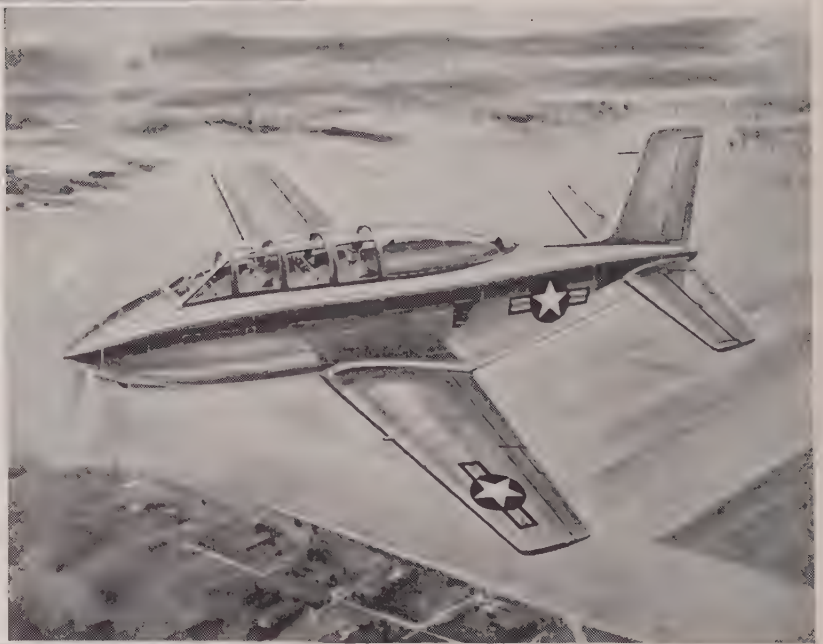


TRAINERS



LOCKHEED TF-80C First two-place jet trainer is this elongated F-80. Its performance is same as that of the F-80 fighter. To make room for extra cockpit, the F-80 was made 3 feet 2 inches longer, and 4 inches higher. It can be flown from either cockpit, both being fully instrumented. The TF-80C, powered by J-33, is in the "600-mph class," and has a service ceiling of 45,000 feet.

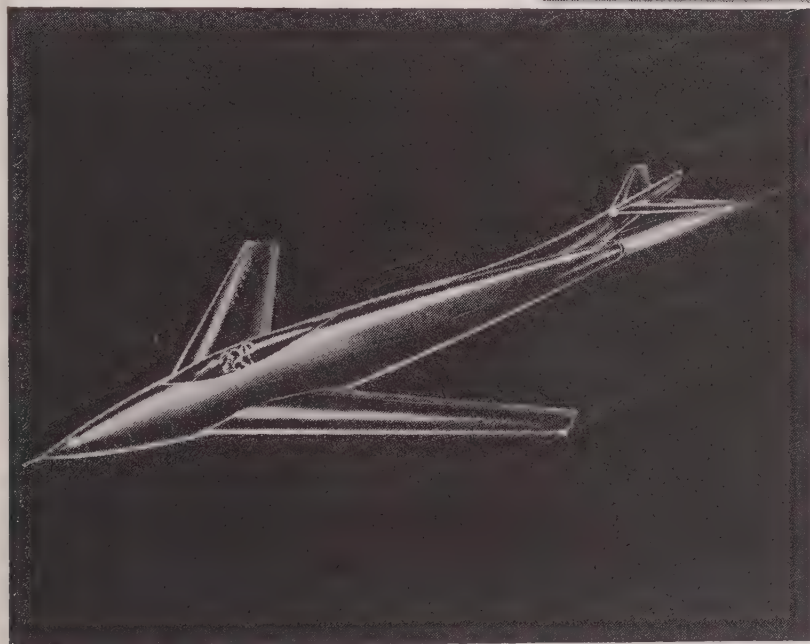
DOUGLAS XT-30 This trainer is still in the process of construction and is not yet an operating Air Force trainer. Basically, the XT-30 is a conventional low-wing monoplane powered by a Wright R-1300 air-cooled engine with 800 take-off horsepower. This engine is submerged within fuselage immediately aft of cockpit and over the wings. Long drive shaft connects engine, prop. The expected top speed of this trainer is 286 mph at 10,000 feet.



BEECH MODEL 45 Another training plane still in development stages and not yet Air Force property is the Beech *Mentor*. Based on design of the well-known Beech *Bonanza*, the *Mentor* is single-engine, basic-advanced, two-place trainer that offers high performance at very low operating costs. Engineering estimates state that the *Mentor's* maximum dive speed is 280 mph. The ship recently made its first flight at Wichita, Kan.

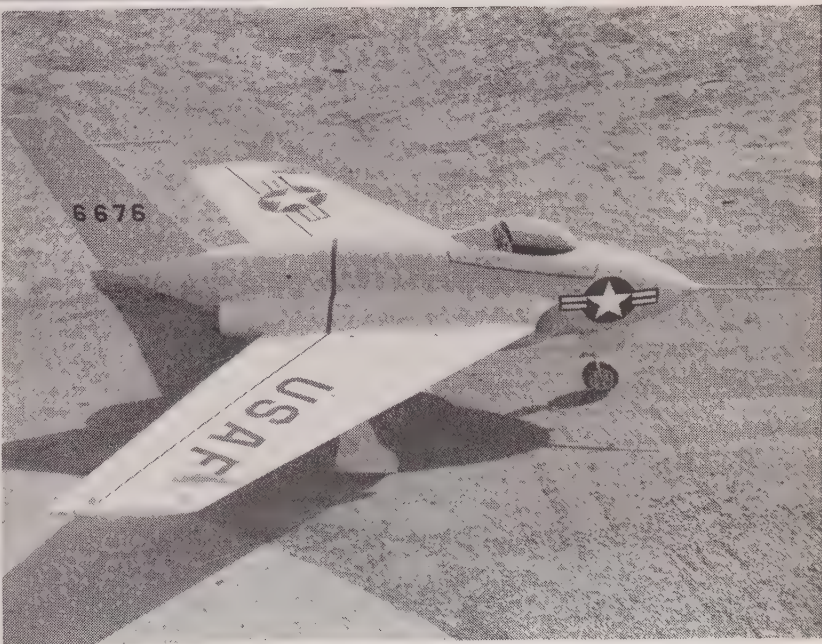
EXPERIMENTAL

BELL X-1 Needle-nosed X-1 is USAF's supersonic-speed research plane powered by a Reaction Motors Model C000C4 rocket which burns a compound of fuel, alcohol and liquid oxygen (8,177 pounds in two-and-a-half minutes). The X-1 has been flown at speed above speed of sound and at over 60,000 feet several times. It was designed to fly 1,700 mph at 80,000 feet.



DOUGLAS X-3 Only artist's conception of this ship is available at this time. Also designed to fly at supersonic speeds, the X-3 is powered by rockets and is reported to be capable of speed of 1,500-mph at altitude of over 80,000 feet. Before arriving at design decision, Douglas engineers had designed 60 different X-3's and considered several different power plants such as ram-jet, pulse-jet, rockets, et cetera.

NORTHROP X-4 One of newest AF research ships and one of the smallest airplanes ever built for the USAF is the bat-shaped X-4. The semi-tailless X-4 is about 20 feet long and has a wing span of only 25 feet. Its controls are patterned after the famed *Flying Wing*. It is powered by two gas turbines and is capable of maintaining longer flight than X-1. It was not designed for supersonic speed, but rather for sonic-speed research.





REPUBLIC XR-12 Still under consideration by USAF is the long-range reconnaissance XR-12 built specifically for photographic work. This ship recently completed a flight from Pacific to Atlantic Coast, non-stop, in seven hours. Photos of the country were made from the XR-12 at 40,000 feet. XR-12 is powered by 3,000-hp Pratt and Whitney engines plus jet exhaust.



NORTHROP XF-79 Whether or not this plane ever will go into production for the Air Forces is not known. The pilot of the jet XF-79 rides prone in order to raise the "blackout threshold," permit faster maneuvers, more abrupt turns and harder pull-outs. Called *Flying Ram*, the XF-79 is powered by two jet units, is rated "over 500-mph class." Each jet unit that powers the XF-79 is listed at 1,500 hp.



DOUGLAS XB-43 Here is another one that is strictly experimental. One XB-43 was built, and to date there are no plans for another. The ship is powered by two General Electric jets, each rated at 4,000 hp, which give the XB-43 a speed in excess of 500 mph. The jet ship carries a two-man crew. Other data pertaining to test results, performance and detailed specifications are not available at this writing.



CONSOLIDATED XF-81 The twin-jet XF-81 is also strictly an experimental aircraft. Two were built, one powered by two GE jets rated at 4,000 hp each, and the second powered by a pair of turbojets driving a propeller. Speed of each ship is listed at "over 500 mph." No other info.

(Continued from page 45)

proximately five miles apart coming in the landing pattern. Pilots being brought in under this system are aware only of a change in voice as they pass from control of the surveillance operator to control of the GCA operator. There is no interruption of instructions and no change of radio frequencies is necessary.

As you come in to Templehof, it's easy to see why setting down there when the ceiling is resting near the tree tops is anything but cozy. Five-story apartment buildings loom up at the ends of each runway. As one pilot put it, "It's kind of like making an approach on the Rose Bowl." And just off to the left is that 400-foot smoke stack that somehow the wartime bomber boys failed to topple. The standard GCA approach descent is at 750 feet per minute or an angle of four degrees. That gets you over the roof tops by a good 75 to 100 feet. The glide path intersects the runway 500 feet from the end—not the usual 1,000 feet used on most runways.

Pilots making their first blind approach to Templehof are usually pretty altitude conscious, but after a few trips they get to rely on the GCA boys and fly just where they are told. If they don't, there is a good chance that they will find themselves winging their way back to where they came from with their cargo still aboard. There is no bad weather "stacking" at Templehof and there is no missed approach procedure. In other words, if you miss the runway on the first pass you don't "go around," you go back home. Unless, of course, there happens to be a gap between blocks, in which case a kind traffic controller might let you fly around and hitch on to the rear. Airlift officials estimate that if attempts were made to squeeze aircraft back into traffic after a missed approach it could easily snarl up the whole shuttle for 24 hours or more.

The smooth-functioning AACS network that is playing such a vital role in Operation Vittles was not "in-being" last June when the airlift got underway. But when the word went around that we were "shooting the works," AACS officials didn't waste any time getting the system established. Men and equipment were rushed to Europe from all parts of the globe.

In less than three weeks, 17 radio beacons were on the air. As GCA operations multiplied a hundred-fold, bulky GCA sets, classified as "non-air transportable" were sawed in half, packed into transport planes, and rushed to Berlin. Other GCA sets, on loan to the RAF since the war or stored in European depots, were put into operation on the airlift. One of the best examples, however, of how fast the organization moved involved one of the GCA sets now at Templehof.

As the airlift throttled into high speed the need for another GCA set at Templehof "soonest" sent two C-54's winging up to Norman Wells, Canada, above the Arctic circle, where one of USAF's newest air transportable sets was installed. Within 7 days this 14-ton, 132-piece unit was at Berlin after having been disassembled at Norman Wells in 50 below zero weather
(Continued on page 67)

(Continued on page 67)

Photo Eyes of the U.S.A.F.

(Continued from page 47)

dicing and low-altitude reconnaissance are performed on maneuvers involving units of the Tactical Air Command.

It is possible that some day television cameras, robots and pilotless rockets will combine to take over the reconnaissance missions of the various military services.

There is, for example, the camera that is presently being installed as standard equipment on jet planes out at Wright Field. According to Col. George W. Goddard this particular camera is capable of taking pictures from a plane or rocket streaking above the earth's surface at 3,000 mph. What's more, the pictures will come out in color and three dimensional.

In describing the camera, Col. Goddard reported that during a recent test, two jet planes equipped with the cameras passed within 500 feet, each traveling in the opposite direction at 500 mph. The pictures of the planes came out so clear that their rivets stood out in fine detail.

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As new machines and techniques are developed they are gradually eased into the operations of a regular aerial recon outfit and then today's planes and cameras may be considered obsolete and will be replaced by the new devices.

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(Continued on page 67)

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(Continued from page 66)

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Skyway to Berlin

(Continued from page 65)

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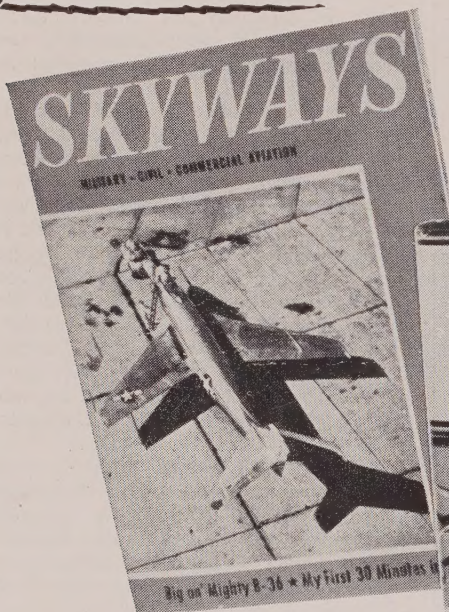
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